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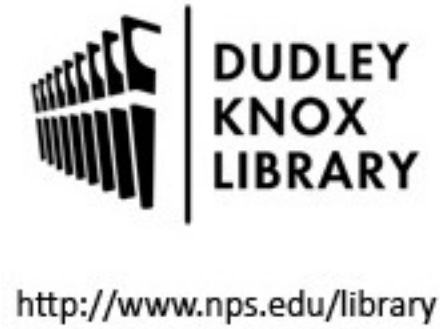

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NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

CHINA'S DEVELOPMENT OF ASYMMETRIC WARFARE AND THE SECURITY OF TAIWAN, REPUBULIC OF CHINA

by

Guo-Woei Jinn

December 2004

Thesis Advisor:	Lyman Miller
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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY ***(Leave blank)***	**2. REPORT DATE** December 2004	**3. REPORT TYPE AND DATES COVERED** Master's Thesis	
4. TITLE AND SUBTITLE: Title (Mix case letters) China's Development of Asymmetric Warfare Capabilities and the Security of Taiwan, R.O.C.			**5. FUNDING NUMBERS**
6. AUTHOR(S) Guo-Woei Jinn			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			**12b. DISTRIBUTION CODE**

13. ABSTRACT (maximum 200 words)

The military changes that have transformed global politics in recent years - especially since the end of the Cold War - have brought about a new revolution in military affairs (RMA) by the United States. The PLA has begun to study the RMA by focusing on asymmetric warfare capabilities under high technological conditions. China believes that asymmetric operations have the advantages of enabling a swift and precise attack and avoiding mass destruction on Taiwan's infrastructure and high-tech industry. They also have the benefits of low intensity, low collateral damage, high efficiency, fast attack, and fast victory. In summary, asymmetric operations are regarded by the PLA as a kind of warfare that conforms both with the dictum of China's ancient war theorist Sun Tzu to "*defeat the enemy without bloodshed and fighting"* and the demands of a modern economy.

In the face of China's development of asymmetric capabilities, Taiwan should think about how best to confront and counter China's threats and to gain a military edge over China.

14. SUBJECT TERMS Republic of China, Taiwan, People's Republic of China, Taiwan Strait, PLA, Military Modernization, Asymmetric Warfare, Information Warfare.			**15. NUMBER OF PAGES** 107
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UL

NSN 7540-01-280-5500 Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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CHINA'S DEVELOPMENT OF ASYMMETRIC WARFARE AND THE SECURITY OF TAIWAN, REPUBULIC OF CHINA

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ABSTRACT

The military changes that have transformed global politics in recent years - especially since the end of the Cold War - have brought about a new revolution in military affairs (RMA) by the United States. The PLA has begun to study the RMA by focusing on asymmetric warfare capabilities under high technological conditions. China believes that asymmetric operations have the advantages of enabling a swift and precise attack and avoiding mass destruction on Taiwan's infrastructure and high-tech industry. They also have the benefits of low intensity, low collateral damage, high efficiency, fast attack, and fast victory. In summary, asymmetric operations are regarded by the PLA as a kind of warfare that conforms both with the dictum of China's ancient war theorist Sun Tzu to "*defeat the enemy without bloodshed and fighting"* and the demands of a modern economy.

In the face of China's development of asymmetric capabilities, Taiwan should think about how best to confront and counter China's threats and to gain a military edge over China.

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GLOSSARY OF ACRONYMS

AAA	Anti-Aircraft Artillery
AAM	Air-to-Air Missile
AAW	Anti-Air Warfare
AOR	Area of Responsibility
ASUW	Anti-Surface Warfare
ASW	Anti-Submarine Warfare
AWACS	Anti-Tactical Ballistic Missile
C2	Command and Control
C4I	Command, Control, Communications, Computer, and Intelligence
C4ISR	C4I, Surveillance and Reconnaissance
CAS	Close Air Support
CCP	Chinese Communist Party
CEP	Circular Error of Probability
CMC	Central Military Commission
CNA	Computer-Network Attacks
DZ	Drop Zone
EMP	Electromagnetic Pulse
EW	Electronic Warfare
GPS	Global Positioning System
ICBM	Intercontinental Ballistic Missile
IO	Information Operations
IW	Information Warfare
LACM	Land Attack Cruise Missile
MIRV	Multiple Independent Reentry Vehicle
MR	Military Regions
MRBM	Medium-Range Ballistic Missile
NVG	Night Vision Goggles
PGM	Precision Guided Munitions
PLA	People's Liberation Army
PLAAF	People's Liberation Army Air Force
PLAN	People's Liberation Army Navy
PRC	People's Republic of China
PSYOPS	Psychological Operations
ROC	Republic of China
SAM	Surface-to-Air Missile
SLBM	Submarine-Launched Ballistic Missile
SLCM	Submarine-Launched Cruise Missiles
SAC	Second Artillery Corps
SRBM	Short-Range Ballistic Missile
SS	Diesel Submarine
SSM	Surface-to-Surface Missile

SSN	Fast Attack Submarine
TRA	Taiwan Relations Act
TSEA	Taiwan Relations Enhancement Act
UAV	Unmanned Aerial Vehicles

ACKNOWLEDGMENTS

I would like to express my sincere thanks to Dr. Lyman Miller, who inspired me to pursue the subject of this thesis. His profound knowledge on Chinese political, military, and foreign policy issues, overwhelming support and guidance, and untiring patience, were instrumental in its successful completion. To Dr. Kalev Sepp and Dr. George Lober, I owe special thanks for carefully reading each revision and guiding me through the thesis process.

I extend special thanks to Lieutenant General Wu Da-Peng, Director of Manpower and Personnel Division, Department of Defense, Taiwan, ROC, who chose me to attend the Defense Analysis Program, and Major General Liu Dong-Bao, Colonel Guo Li-Sheng, and Colonel Chen Hui-Xing and all those in my chain of command who supported my assignment to the Naval Postgraduate School.

Most of all I would like to express my deepest thanks to my loving and devoted wife, Anita. Her patience, understanding, and remarkable ability to maintain a pleasant, comforting home during this highly stressful time made this process possible.

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EXECUTIVE SUMMARY

Beijing's Taiwan policy has evolved in different time periods from "washing Taiwan in blood", "reunification by means of forces", and "peaceful negotiations", to "one country, two systems", but has retained the use of force as an unchanged principle. To this end, the PRC proposes a peaceful reunification. However, the PRC also reserved the right to use any means it deems necessary, including military operations, to maintain its sovereignty and territorial integrity.

The threat of reunification by force is now more credible than ever, given to the PRC military buildup since the 1980s. The PRC's determination to seize Taiwan is beyond all doubt, but how it may achieve that objective is still arguable. Although the PRC has significant and numerous advantages over ROC forces, it is highly unlikely that the PRC would engage most, or even a significant portion of, its military forces against Taiwan.

According to its 2004 annual report on PRC military power, the United States Department of Defense suggests that Beijing's military options might include one or a combination of several, but are not limited to, a naval blockade, an amphibious invasion, information operations, an air campaign, use of conventional ballistic missiles, and ground forces with special force operations. Among all the courses of actions, strictly from a military point of view, the PLA could use conventional approaches. However, given such considerations as its current military limitations, a cost-benefit analysis on both sides, the possibility of foreign intervention, and the continued financial prosperity of Taiwan after the reunification, the PLA is now more inclined toward asymmetric operations to seize Taiwan. Furthermore, the pattern of the Chinese use of forces also suggests that the PLA has been successful since its establishment at achieving offensive surprise.

This thesis will first address the PRC's overall efforts to modernize its armed forces, and particularly the development of asymmetric warfare capabilities. It will then discuss asymmetric military options to solve the Taiwan issue, based on the PRC's current capabilities and threat perception of U.S. involvement in a Taiwan Strait conflict.

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I. INTRODUCTION

A. BACKGROUND

The People's Republic of China (PRC) is a rising great power. Over the past two decades, the government switched from the old system of collectivism to a more open system of household and village responsibility in agriculture, increased the authority of local officials and plant managers in industry, permitted a wider variety of private-owned, small-size enterprises in services and light manufacturing, and opened the market to attract foreign trade and investment. The result has been an astonishing prosperity in GDP since 1978. By 2003, by some measures, China stood as the second-largest economy in the world after the United States, although in per-capita terms the country is still poor.

It is only natural for a nation with such great strength to implement part of the newly developed wealth to enhance its national security, especially China who had one of most glorious histories in the world before the 19th century. Since the mid 1980s, the PRC armed forces have undergone a significant downsizing and modernization program. The newly reformed forces enable the PRC to achieve two objectives. First, is to become a regional hegemony and second to unify Taiwan with China, either peacefully or militarily.

The overwhelming victory of coalition forces in the Gulf War and the strategic air bombing in Kosovo have demonstrated how advanced and sophisticated weaponry can change modern warfare. The PLA realized its inability to fight the future war and as the result, changed its defense doctrine to "local, limited war under high-tech conditions". The PRC leaders are hoping that this Revolution in Military Affair (RMA) will provide its forces the ability to wage rapid, surprise attack, and strategic strike war against the ROC. Furthermore, in anticipation of U.S. involvement in the Taiwan Strait, the PLA has gradually developed its asymmetric operation capabilities such as Electronic Warfare and Computer Network Attack to delay and deny technologically advanced force and exploit the U.S. reliance on technology.

B. THESIS QUESTION

This thesis will address the practical implications of China's overall military modernizations, specifically in its asymmetric strategies and capabilities. It will first analyze the integration of the original concept of asymmetric warfare from ancient Chinese history and modern Western thought. It will then examine branches within the People's Liberation Army and their levels of modernization in asymmetric capabilities. Finally, this thesis will show what the PRC courses of action in the Taiwan Strait are if the reunification should resort to force.

C. ORGANIZATION

Chapter II will offer a brief background of ROC-PRC relations since the split of the country and how the United States has played a role in influencing the balance of this sensitive equilibrium. It will then present the original concept of asymmetric warfare in ancient Chinese history and how the PRC has integrated it with modern Western thought. It will also discuss the motivation behind the PRC's effort to pursue asymmetric warfare strategies and capabilities.

Chapter III will analyze the conventional capabilities of PLA ground forces, the PLA Navy, and the PLA Air force, respectively. It will provide a brief background of the modernization progress, asymmetric capabilities development, and their application in a Taiwan Strait conflict.

Chapter IV will discuss the PLA strategic forces. It will examine some selected current developments in SAC's short-, medium-, long-, and intercontinental-range ballistic missiles inventories and whether the continuous build-up of SAC capabilities will shift the PRC nuclear strategy from "minimum deterrence" to "limited deterrence".

Chapter V will present the current abilities of the PRC to conduct information warfare. This chapter will analyze current Chinese literature on information warfare and how this strategy would be a threat to both the United States and the ROC.

Chapter VI will analyze potential military options if the reunification should require the use of force. Both conventional and asymmetric approaches will be discussed and, based on current PRC doctrine, capabilities, and external factors, the most attainable option will be suggested.

Chapter VII will analyze the current military capabilities and social dimension of the ROC and suggest possible measures for the ROC to use to counter the increasing threat of PRC aggressive actions.

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II. ROC-US-PRC RELATIONS

A. BACKGROUND

The current conflict between the Republic of China (ROC) on Taiwan, and People's Republic of China (PRC) began approximately 80 years ago as a struggle for power between the Nationalist Party and Communist Parties within the territories of mainland China. After the Civil War temporarily ended in 1949, the Nationalists flew to Taiwan, while the Communists established authority in mainland China. Since then, a country that shares the same culture, languages, and ancestry, is divided not only geographically by a cold and narrow Taiwan Strait but also politically, into two regimes based on the ideologies of differing political systems (See Figure 1 for a map of this area).

Figure 1.Federation of American Scientists, www.fas.org/man/dod-101/taiwan-geo.htm. Accessed on November 10, 2004.

From the PRC perspective, the ROC is a renegade province, an inalienable part of China's territory. As PRC authorities have continuously announced publicly: "China will

do its best to achieve peaceful reunification, but will not commit itself to ruling out the use of force". Throughout the more than half century of separation, China has launched two offshore islands bombardments, shelling Mazu and Jinmen, in attempts to achieve reunification (Whiting, 2001). With assistance from the United States, the ROC has managed to defeat such attacks. But the ROC's resignation of its permanent seat on the Security Council in the United Nations in 1971, and the United States' change of its diplomatic recognition from Taipei to Beijing in 1979, subjected the lifeline of the ROC to a grave danger (Sutter, 2001, p.40). However, since the U.S. creation of the Taiwan Relations Act (TRA) in 1979, although the United States has never officially pledged its support in defense of the ROC in the scenarios of the PRC's invasions, it continues to assist the ROC in the form of defensive arms sales, military training, and a naval presence.

On the east side of the Strait, the ROC has focused on democratic, economic, and industrial developments, and as a result, the ROC has become one of the most highly industrialized countries in the region. However, the PRC's steadfast refusal to renounce the use of force continues to threaten the ROC's national security, and therefore, the ROC continues its build up of defensive capabilities using foreign procurement and self-development research programs. The ROC forces now possesses qualitative advantages over their PRC counterparts, but the recent modernization and transformation within PLA since 1990 are slowly eroding this edge and its technical ability to launch a major attack against the ROC will likely increase (Swaine & Mulvenon, 2001, p.125). In addition, in the pursuit of an ROC national identity, a gradual increase in those among the Taiwan population who are pro-independence is also diminishing the general will to fight.

Since the split into two countries, the United States has played a very interesting role in this pas de deux, sometimes as a participant and sometimes as simply an observer. Until 1979, the United States was the ROC's closest and strongest ally. The U.S.-ROC mutual defense treaty safeguarded the ROC security through its darkest period, a time of possible "Liberation by Blood" by a full-scale PRC invasion. U.S. foreign aid enabled the ROC's collapsing economy to become one of the "Four Dragons" in Asia; and American democratic achievement encouraged the ROC's political reform. Even after normalization between Washington and Beijing, the Taiwan Relation Act (TRA)

continues to provide the ROC a sufficient self-defense capability. Furthermore, although formal U.S. diplomatic recognition was withdrawn by the United States and given to Beijing, the TRA also restored de facto diplomatic relations and treated the ROC on Taiwan as a de facto independent entity (Sheng, 2001, p.14). The pragmatic relations with the United States later become the ROC's model for foreign policy with most of the countries that established official recognition of the People's Republic of China. More important, although the United States recognizes only one China with Taiwan as part of it, the U.S. opposes any attempt by the PRC to effect reunification by force and only supports peaceful resolution that is mutually agreeable to both the principals.

The evolving U.S. foreign policies toward both sides of the Strait have profound implications for the security of, and the relations betweens, the ROC and the PRC. The United States has played and will most likely continue to play a significant role in the Taiwan Strait. This chapter addresses that triangle of relations as well as the People's Liberation Army strategic modernization and its the development of asymmetric warfare.

B. ROC-US-PRC RELATIONS

1. Chinese Civil War (1945-1949)

The sudden surrender of Japan in WWII left the Nationalist government (the Kuomintang, or KMT) and the Communists rebels totally unprepared for the termination of the war. Both parties started a mad race to gain the surrendered Japanese territories, arms, and supplies. Fortunately, with U.S. assistance in transportation and 50,000 Marines in key ports and communication centers awaiting the arrival of the Nationalist forces, the KMT regained control in central, east, and south China (Hsu, 2000, p.620). However, in Manchuria, Russia gave the communists considerable quantities of surrendered Japanese arms, which greatly enhanced their military ability in the Civil War to come.

To prevent a large-scale civil war, President Harry Truman dispatched General George Marshall to negotiate peace between the Nationalists and the Communists under the condition of not involving the United States in any direct military intervention (p.629). Nevertheless, the cease-fire under American auspices failed when the KMT refused the coalition government in March 1946 (Kaplan & Sobin, 1980, p.69). Inevitably, a whole- scale civil war broke out and the country, which had just survived

eight years of Sino-Japan war, was back in battle. For several reasons, such as the KMT's war weariness; a hasty decision to occupy Manchuria; loss of public confidence and respect; a retardation of social and economic reforms; inflation, economic collapse, and the failure of American mediation and aid (Hsu, 2000, p.642), the Nationalists temporarily relinquished its rule in China and relocated the ROC government to Taiwan. China then fell into the hands of the Communists and, on October 1, 1949, Mao announced the foundation of the PRC.

In brief, the U.S. policy toward China during this period was one of avoidance of any participation in the Civil War. President Truman made his position clear: "The United States government will not pursue a course which will lead to involvement in the civil conflict in China" (Spence, 1990, p.527). Washington explicitly stated that massive intervention was not "practicable or desirable": in that regard, although the rise of a Communist China was not desirable, it was tolerable (p.635). China did not possess a strategic importance and, therefore, was not likely to be a threat to United States security for decades.

2. Pre-1979 Relations with the ROC

The outbreak of the Korean War shattered the apparent harmony on June 25, 1950, when a massive force of North Korean troops crossed the thirty-eighth parallel and invaded South Korea. In anticipation of a PRC aggregation to attack the ROC on Taiwan, President Truman ordered the U.S. Seventh Fleet to patrol the Taiwan Strait as a neutralization move (Spence, 1990, p.529). After the Korean War ended, the ROC and the PRC were involved in the first crisis in the Taiwan Strait, a dispute over several unclaimed Pescadores Islands. On December 2, 1954, the United States, in response to PRC aggression, signed the U.S. ROC Mutual Defense Treaty. However, the PRC then issued a lengthy statement denouncing the treaty and reaffirming the PRC's determination to "liberate" Taiwan (Chiu, 1979, p.160). Subsequently, the PRC conducted an amphibious attack with air support on Yikiangshan, an island held by 720 nationalist defenders, which clearly demonstrated the PRC's intention to launch a future attack on Taiwan. The U.S. Congress promptly passed a resolution authorizing President Dwight Eisenhower to employ armed forces if such attack on Taiwan and the Pescadores

arose. The commitment and determination of the United States to defend Taiwan would later prove to be very effective, causing the PRC to stop shelling Taiwan.

On August 23, 1958, the PRC suddenly began a massive artillery shelling of Jinmen for 44 days. During the bombardment, the United States assisted the ROC with some limited logistic support, escorting ROC supply ships to a three-mile limit off Jinmen. However, it was the communiqué issued by the United States and the ROC on October 23, 1958, that affirmed the U.S. support of the ROC to resist PRC aggression (p.170). Due to the logistics problems and lack of support from the Soviet Union, the PRC later announced an "even-day ceasefire" but only restricted to leaflets. Finally, on January 1979, the PRC officially announced a permanent ceasefire in the second Taiwan Strait crisis.

The Great Leap Forward movement in 1958 proved to be an economic disaster. Food shortages and some natural calamities caused the PRC significant damage. Furthermore, the PRC's border tension with the Soviet Union and India, as well as the possibility of U.S. military involvement in Vietnam increased the instability. The ROC saw an opportunity to recover the mainland and started a tremendous effort in offensive operations. As the result, the PRC began to reinforce its forces for a counterattack across the Taiwan Strait. The United States President, John F. Kennedy, afraid of involvement in a war, issued a statement on June 27, 1962, that the American commitment to ROC was restricted to defense. The United States would not support the ROC's attempt to invade the mainland (p.173). After the president's clearly stated position, the possibility of a military confrontation gradually abated: the third Taiwan Strait crisis was over.

In July 1971, President Richard Nixon announced on a visit to China that, before May 1972, the United States would seek the normalization of relations with the PRC. The announcement had a dramatic impact on ROC foreign relations. Many countries interpreted the move as an indication of Nixon's intent to ultimately abandon the ROC. As a result, a UN vote called for the PRC to replace the ROC and forced the ROC to vacate the United Nations in 1971 (Clubb, 1978, p.500). The Shanghai communiqué was issued later after President Nixon concluded his visit to the PRC. After President Nixon concluded his China visit, a Shanghai communiqué was issued which stated that "the

United States acknowledged that there is but one China and that Taiwan is a part of China and is China's internal affair" (Hsu, 2000, p.731).

On December 15, 1978, President Jimmy Carter suddenly announced that the United States and the PRC would establish diplomatic relations on January 1, 1979, and the U.S. would sever diplomatic relations with the ROC on that date. Furthermore, the Mutual Defense Treaty between the United States and the ROC would terminate a year from that date and initiate the withdrawal of all U.S. forces from Taiwan within the next four months (Chiu, 1979, p.184).

3. 1979 Taiwan Relations Act (TRA)

While the United States and the PRC continued to develop positive economic and diplomatic relations, the official relations between the United States and the ROC were made intentionally ambiguous by the U.S. enactment of the Taiwan Relations Act (TRA) on April 10, 1979. The TRA reaffirmed the U.S. commitment to a peaceful resolution to the Taiwan question and to the maintenance of peace and stability in the western Pacific (p.188). The TRA also authorized U.S. arm sales to the ROC in an effort to defend against possible PRC aggression – while maintaining strategic ambiguity regarding the use of U.S. forces. The TRA has become the cornerstone of stability in the Taiwan Strait for the past two decades.

4. 1980 – Present

One of the principal elements within the TRA concerned the level of U.S. "defensive arm sales" to Taiwan. The Reagan administration encountered strong opposition by PRC officials who said that the TRA was simply "unacceptable" because it prepared the legal ground for "two Chinas" (CRS, 2001, p.6). In response, President Reagan signed the a third joint communiqué in 1982 that stated that the United States agreed to limit arms sales to Taiwan if, in return, the PRC would maintain strategic cooperation with the United States against the Soviet Union. Meanwhile, prior to the announcement of the Joint communiqué, President Reagan also sent a letter containing six assurances by the United States to the ROC. In essence, the United States:

- has not agreed to set a date for ending arms sales to the ROC;
- has not agreed to hold prior consultations with the PRC on arms sales to the ROC;

- will not play any mediation role between Taipei and Beijing;
- has not agreed to revise the TRA;
- has not altered its position regarding sovereignty over Taiwan;
- will not exert pressure on the ROC to enter into negotiations with the PRC.

The communiqué pledged a general reduction in U.S. arm sales to the ROC so long as conditions in the Taiwan Strait remained peaceful. In fact, ROC and PRC relations remained relatively calm for the following fourteen years, until President Lee Teng-Hui visited Cornell University, his alma mater in 1995. In his speech there, Lee clearly made a point about the existence of the ROC on Taiwan to counter the so-called "One China Policy". The PRC responded furiously and announced it would conduct a series of military exercises in the Taiwan Strait, including missile tests in July and August, to warn the ROC of the danger of a move toward independence. During its first direct presidential election, the PRC once again conducted missile tests twice using three M-9 Short Range Ballistic Missiles against the ROC. In response, the United States dispatched two aircraft carriers to the Taiwan Strait (Zhao, 1999, p.280). Although the ROC stock market underwent devastating damage, the PRC's coercive strategy proved to have a negative effect on the outcome of the election. Nonetheless, Lee still won a majority of the votes. This fourth Taiwan Strait crisis ended when the PRC concluded its military exercise, and the PRC perceived not only how the United States might react to any future military confrontation across the Strait, but how to counter the U.S. threat, and what possible course of action to take if a use of force was the last resort.

During President Bill Clinton's 1998 visit to China, he assured the PRC that a "three-no's" policy was the United States position regarding the Taiwan issue. He pledged that the United States had no "support for Taiwan independence; no recognition of two Chinas and no support for Taiwan's membership as a sovereign nation in any international organizations" (N/A., 1998). However, pressure from the Congress triggered the Taiwan Security Enhancement Act in 1999 which authorized the United States to increase the sale of advanced military aircraft and warships to the ROC to balance military power across the Strait.

President George W. Bush's policy toward the PRC is markedly different from Clinton's position. The Bush administration views the PRC as a strategic competitor, rather than a strategic partner (Wang, 2003, p.26). On defense policy, President Bush has moved from "strategic ambiguity" to "strategic clarity" (Brookes, 2003). On several occasions, top officials in the administration, including President Bush and Secretary of State Colin Powell, showed strong support in assisting the ROC to defend itself in the scenario of the PRC's use of force (Brookes, 2003). The PRC then warned the Washington that the cost of increased arm sales to Taiwan would damage Sino-U.S. relations.

C. RELEVANCE OF PLA MODERNIZATIONS AND DEVELOPMENT OF ASYMMETRIC WARFARE

The People's Republic of China is a rising great power. For the past two decades, the PRC has been dedicated a great deal of its newly developed wealth to strengthen national security. However, the unfortunate fact is that, although the PRC has greatly developed its economy, its domestic imperatives - such as growing income disparities and rising unemployment, corruption and other economic crimes, and keeping stated-owned enterprises afloat have continue to absorb a great deal of this wealth (N/A, 2004). Those potential social and economical problems have weakened the government's actual expendable budget. For the PLA, although it has received an average 16.7 percent of the national government expenditure for defense from 1950–2001, one-third of the defense budget is spent on living expenses such as salaries and pensions (Shambaugh, 2004, p.190). Thus PLA still has to operate on a relatively limited budget. The PRC's solution to this problem is that, instead of being strong everywhere, the PLA will focus on developing a specific strength, or "Pocket of Excellence", against its potential adversaries' weaknesses.

Military modernization since 1985 has enhanced the People's Liberation Army's (PLA) weapon systems and increased its overall abilities in war-fighting. According to Stokes, several factors drive the PLA's strategic modernization and development of asymmetric warfare (1999, p.12). First and foremost are the mainland's sovereignty claims to Taiwan. Although Beijing claims that it prefers to settle the Taiwan issue in a peaceful manner, the PRC's leader will not renounce the use of force. A well-equipped

and trained PLA is the guarantee of reunification of the country when a use of force is inevitable. Developing the ability to subdue Taiwan is the most important drive for PLA modernizations. However, the PRC also fully understands that the United States maintains the option of intervention if the PRC takes military action against Taiwan. Hence, the PLA is developing the asymmetrical ability of "strategic strike" to neutralize U.S. technological advantages. Equally important, perceived threats on the PRC's peripheral, particularly from the east and south of China, have been a grave concern for PLA strategists. Border clashes with India in 1962, with the Sino-Soviets in the late 1960's, and with Vietnam in 1979 are still indelible memories for the PRC (Mulvenon & Yang, 1999, p.111). To ensure national security and territorial defense in the years to come, the PLA Rapid Reaction Force (RRU), PLA Navy (PLAN), PLA Air Force (PLAAF), and Second Artillery Corps have undergone several substantial modernizations.

Second, the overwhelming victory of U.S. forces in the first Gulf War and the Kosovo air campaign changed dramatically the doctrine of the PLA: that "gaining the ability to strike strategic targets" is a crucial elements for winning the next war. In addition, the new asymmetrical approach of the PLA doctrine emphasizes an ability to wage war against a superior adversary by "striking first" to offset its technological and logistical advantages. This change of doctrine also reflects the PLA's aspiration to pursue an ability to engage in Information Warfare (IW).

Finally, the quest for great-power status obviously has had a strong effect on PLA modernization. From a Chinese perspective, the notion of great power usually consists of economical prosperity, enormous natural and human resources, and the ability to project force. The PRC has for several years had one of the most constantly increasing economical growth records in the world. The next step to becoming a great power will be its transformation in military development.

Clearly, the trend in recent years suggests a far more capable PLA within the next two decades, with a great chance of successfully imposing the PRC's will upon the ROC. Of course, a decision to go to war would be based on a combination of several factors of political, economic and military consideration. However, if done purely from a military point of view, the use of force will probably be a more attractive option for the PRC's

leadership, particularly in a surprise, less-civilian-casualties, and fast-result-type of action that will reduce the hatred among the population in Taiwan after reunification. Furthermore, the PRC understands well that the United States still maintains the option for intervention, which could be the greatest obstacle for the PRC. The development of an asymmetric warfare ability, to focus on an adversary's weakness, can deter interference from foreign nations, coerce Taiwan from formally declaring its independence and guarantee success if the use of force is a last resort.

D. ASYMMETRIC WARFARE

A direct translation of the Chinese term for asymmetric warfare "*buduichen zhanzheng"* should read "warfare between non matching opponents". However, this definition is merely correct and yet superficial. According to one Chinese Senior Colonel Kang, the strategic concept of asymmetric warfare is the pursuit of "the use of different ways to secure an upper hand over the adversary" (Kang, 2002). He further accentuates the Mao concept of "you fight your way and I fight my way" as the simplest and the most classical generalization of asymmetric warfare.

Although the concept of waging asymmetrical war emerged in ancient Chinese history, it was the recent U.S. effort, in the Revolution in Military Affairs (RMA), that brought this concept to the world's attention. One of the primary reasons for decisive victory in both the first Gulf War and the Kosovo air campaign was that the United States's advanced military technologies overwhelmed inferior adversaries. Since then, many countries are studying how the new asymmetrical advanced technologies can alter modern warfare. For the PRC, RMA means a local, limited war under high-tech condition. However, the PLA military strategists have concluded that U.S. military capabilities are beyond the PLA's reach for several decades. Therefore, for the perceived threat of U.S. involvement in the Taiwan Strait, the PLA is developing an asymmetrical ability to undermine the U.S. advanced technologies.

To understand the current PRC's concept in asymmetric warfare, therefore, it is necessary first to examine the Western conception of asymmetry.

1. Western Concept of Asymmetric Warfare

The modern concept of asymmetric warfare can be traced back as early as 1991. After the overwhelming victory of U.S.-led coalition forces in Iraq, the U.S. military

started to analyze the potential threat of an implementation of asymmetry toward the United States. The Joint Doctrine published in 1995 introduced the concept of asymmetric warfare (Metz & Johnson, 2001, p.2,). However, that doctrine defined asymmetric warfare only as engagements of dissimilar branches of armed forces (such as air versus land, sea versus air, etc.), and thus the definition was narrow and had limited utility. In Secretary Cohen's report, the Quadrennial Defense Review in 1997, his emphasis on an "enemy use of asymmetric means to attack Americans, both abroad and at homeland" marked the beginning of official attention to this new type of warfare. Another document, the Joint Vision 2020, published in 2000, said that by avoiding U.S. strengths and concentrating on its vulnerabilities, the enemy could now delay, deter or even counter the U.S. military power. The use of asymmetric means to threaten life and national security is probably the greatest fear of U.S. leaders. The tremendous loss of life and financial instability resulting from the attack against the Twin Towers in 2001 proved the reality and utility of asymmetric warfare.

According to Lieutenant Colonel Yu in a research paper for the Command General Staff College in Taiwan, ROC (Lu, 2003, p.13), the modern Western concept of asymmetric warfare usually contains two perspectives: high intensity and low intensity. He explained that when armed forces confront a superior antagonist, "low asymmetric warfare" includes such the tactics as avoiding head-to-head confrontation, deception, camouflage, evacuation, terrorism, and guerilla-type-operations to deplete the enemy's strength. The weaker force must implement an asymmetry of will, to suffer pain and loss in a protracted war, in order to defeat the superior force. Throughout history, there are numerous cases of strong countries defeated by weak ones. One of them was Vietnam.

In contrast, when facing an inferior antagonist or when casualty minimization is essential for the continuous use of forces, "high" asymmetric warfare must then be practiced. Using predominant advanced technologies, intelligence, training, and leadership, the superior force can conduct a decisive, fast-paced, and low-casualty-rate war over the inferior country. Examples include Germany's Blitzkrieg over England, Operation Desert Storm in Iraq, and the air campaign in the Kosovo War.

After studying and observing American doctrines and practice, we conclude that the fundamental concepts and principles of asymmetric warfare include maximizing one's advantages to attack an antagonist's weaknesses while avoiding his strengths in order to achieve victory. Both cases of a weaker attacking a stronger and vice verse are practices of asymmetric warfare; the focal point is how to achieve and develop one's "pocket of excellence" to create freedom of maneuver and gain superiority over the enemy.

2. Chinese Concept of Asymmetric Warfare

In the Eastern side of the world, the development of concepts for Chinese asymmetric warfare can be found in one classical strategic military writing: *The Art of War* written approximately 2600 years ago. In his book, Sun-Tzu writes:

> All warfare is based on deception. When confronted with an enemy one should offer the enemy a bait to lure him; feign disorder and strike him. When he is concentrated, prepare against him; where he is strong, avoid him.

The Art of the War had a tremendous impact both on military and political thinking throughout Chinese history. Although Mao Tse-Dong claimed he had never read this book, his theory of "People's War" that successfully took over China after the civil war was actually deeply influenced by the Sun-Tzu. In a letter to his division commander during the Chinese Civil War, Mao gave specific guidance to "destroy the weakest portion of the enemy first then strongest part later; the enemy fights what he has and I fight what I have" (Liu, 2000, p.103). This notion seems to be very straightforward, but it contains the strategic asymmetry of "concentrate my strength and avoid weakness; prevent force-on-force battle and attack the antagonist's vulnerability." However, up to this moment, China has only engaged in what is called "low asymmetric warfare", or guerrilla- type operations which did not involve much high technology.

The overwhelming victories of the U.S.-led coalitions in Desert Storm and Kosovo triggered China's new analysis of asymmetric warfare, particularly on advanced military technology. According to Lee, there were only five journals published by PLA officials regarding asymmetric-warfare strategies prior to Kosovo, and all of them were only conceptual analyses. However, after the air campaign in Kosovo, there was a

gradual increase in the number of journals published. From 1998 to 2002, the total number of journals published by PLA officials per year was 2, 36, 47, 58, and 69, respectively (Lee, 2002, p. 151). This phenomenon, overall, explains the increasing attention of the Chinese to the development of asymmetric warfare.

Similar to the United States, the modern Chinese approach of asymmetric warfare focuses both on low and high asymmetry. Ross stated that the PRC is developing its capabilities in asymmetric warfare for two primary objectives. The PLA's first objective is to deter or delay U.S. involvement in the Taiwan Strait scenario of military conflicts. China has anticipated the possibility of U.S. involvement; therefore, the PLA has developed its "assassin's mace", or the "trump card", to undermine U.S. advanced-technology systems or exploit their vulnerabilities (DoD, 2000). Moreover, an attack on communication nodes and intelligence systems by a computer virus can paralyze the enemy's command and control facilities, causing an "electronic Pearl Harbor". Second, the capabilities of asymmetric warfare can inflict or threaten high cost for a superior antagonist. This strategy is most likely to target at an adversary's will to fight with psychological warfare. The PRC's emphasis on the development of Intercontinental Ballistic Missiles (ICBM) and Type 094 submarines equipped with sea-based ballistic missiles JL-2 are good examples. In the Taiwan Strait scenario, the possibility of a retaliative attack by the PRC could deter or undermine the determination of U.S. intervention on behalf of the ROC.

More important, the PRC's asymmetric developments focus on achieving speed and surprise during military operations against the ROC. The establishment of Rapid Reaction Forces (RRP) and an overall modernized PLA Air Force can improve the PRC's ability to achieve quick and decisive results. In addition, the increasing deployment of DF series short-range-ballistic-missiles across the Strait also poses a significant threat to the security of Taiwan. The increasing ability of the PRC to conduct a fast-paced and decisive attack would ultimately deny U.S. engagement as a fait accompli.

E. CONCLUSION

For the past two decades, the People's Republic of China has spent tremendous effort on transforming the PLA into a twenty-first-century armed forces. However, because of its limited defense budget and the urgency of perceived threats, instead of

modernizing the entire force, the PLA has chosen to obtain a "pocket of excellence", or "trump card", that focuses on its adversaries' weaknesses. In compliance with the national strategy of conducting limited, local war under hi-tech conditions, the PLA focuses on developing its asymmetric ability in the following specific areas (Xiao, 1999, p.69):

- Prioritize the modernization of the PLAN, PLAAF, and strategic ballistic units;
- Establish a quick, strategic-strike Rapid Reaction Units;
- Develop a local and limited high-tech war-fighting ability; and
- Strengthen the capabilities in electronic warfare, information warfare, psychological warfare, and anti-satellite ability.

The PRC's asymmetric warfare strategies toward the United States and ROC have different utilities. First, regarding the United States, the PRC's goal is to develop "low" asymmetry to deter or delay a U.S. response in the Taiwan Strait scenarios. By using its "pocket of excellence", the PRC hopes to achieve superiority in certain fields to cripple the U.S. C4ISR system. On the other hand, the PRC is modernizing it military forces and developing its "high" asymmetric ability to coerce Taiwan, ROC, into reunification under terms favorable to the PRC. To successfully defend Taiwan from a mainland Chinese military invasion, Taiwan must develop efficient countermeasures.

The Taiwan ROC is a relatively small country compared to the PRC; however, by promoting the will to fight among the general population in the scenario of a Chinese invasion and exercising those counter measures only as defensive postures, the ROC can delay a full-scale Chinese invasion until international intervention.

III. PEOPLE'S LIBERATION ARMY CONVENTIONAL FORCES

A. GROUND FORCES

1. Background

The PLA ground forces now comprise the world's largest army force, with a total strength of some two million men and support personnel, or 80% of the PLA's total manpower. This force can deploy 8,300 Main Battle Tanks (MBT), 5,500 Armored Personnel Carriers (APC), 25,000 artillery guns, and multiple rocket launchers (Shambaugh, 2004, p.252). In addition, this already enormous force can be reinforced by a 140-million militia, 1.5 million People's Armed Police (PAP), and reserve troops numbering from 500,000 to 600,000 in a time of crisis (170).

The operational doctrine of PLA ground forces prior to the mid 1980s followed the concept of Mao's "People's War". The defense strategy was to deploy large divisions, in conjunction with vast paramilitary forces, in the defense of mainland China against an all-out attack by an adversary. The ground forces consisted of lightly equipped infantry units, supported by tanks, artillery, and engineer, and anti-tank units.

In the wake of the shocking results in the Sino-Vietnam border conflict in 1979, the PRC leader realized that a huge but poorly equipped ground force was incompetent on the modern battlefield. Therefore, since 1985, the PLA ground forces have undergone a series of modernizations. The emphasis has ranged from streamlining the Military Region's (MR) command and control structure to foreign arms acquisitions and procurements, and demobilizations of troops. As a result, from 1985-1988, a total of one million ground troops were reportedly trimmed from the ranks (Mulvenon, 2003, p. 114). In return, better equipment and training were given the core units that remained in the PLA ground force.

Overall, PLA ground forces have been the last to benefit from the PRC's increasing military modernization. The priority has been set on upgrading the air and naval forces' foreign acquisitions while ground forces benefit from a large investment in the domestic-production capability (Fisher, 1999, p.106). In addition, even though force reductions and selective new-equipment acquisitions are creating a more mobile, combat-

ready unit within the larger ground force, the army's ability to project force much beyond China's borders remains limited due to a shortage of naval amphibious ships, heavy cargo-carrying aircraft, long-range transports, and other logistical shortcomings. Although the PLA ground force has improved its amphibious attack abilities in recent years, there are no signs that Beijing is serious about increasing its heavy-lift capacity or conducting sustained ground operations.

In spite of the preceding problems, the PLA ground force's modernization is reflected in the asymmetrical development of the Rapid Reaction Units (RRU), or Fist Unit, which are given the highest priority in obtaining resources and funds. The RRU is capable of quick deploying upon notification of deployment (Mulvenon & Yang, 2002, p.322). Another major development is the creation of Army Special Forces (ASF) that specialized in surveillance, reconnaissance, and high-value-target distortion. According to an ROC Defense Report published in 2003, in terms of unconventional forces, the RRU and ASF are the most credible threats to the security of Taiwan in support of an asymmetric attack.

This chapter discusses the development of the PLA Rapid Reaction Units and Army Special Forces within the ground force and their possible roles in an asymmetric assault on the Republic of China on Taiwan.

2. Rapid Reaction Units

During June 1985, the Central Military Commission (CMC) of the PRC, as represented by Chairman Deng Xiaoping, stated that "there will not be large-scale warfare in the foreseeable future" (Yang, Liao, 1999, p.48). Deng subsequently shifted the strategic doctrine of the PLA from a "People's War under Modern Conditions" to a "Limited, Local War". Therefore, the military strategists of the PLA concluded that a military operation in the new era was designed to enhance two military capabilities: the capability of modern strategic-weapon systems to exert effective deterrence; and a capability to develop highly competitive, high-technology-based Rapid Reaction Units to cope with future small-scale, highly intensive regional combat and military operations (p.49).

In order to adjust to the new doctrine and to fight both efficiently and effectively, the ground forces started a most important organizational reform in the mid 1980s by creating the RRU. The priority mission was to be "the first PLA forces to respond in time of crisis," to be ready to mobilize in 24 to 48 hours upon notification (Mulvenon, 2003, p.116). In addition to the Air Force's 15th Airborne Corps which is the first military, primarily strategic, rapid reaction unit (discussed in a later chapter), the PLA also designated four group armies (the 38th, 39th, 54th, and 23rd) as RRUs. Furthermore, each military regions also has RRUs assigned to one or more divisions, and which are expected to deploy within their military regions or nationwide (p.16). According to the U.S. Fiscal Year 2000 Department of Defense Report to Congress, "approximately 14 of the PLA ground forces divisions with estimated 300,000 troops are designated as RRU: combined arms units capable of deploying by road or rail within China without significant train-up or reserve augmentation". The RRUs are generally considered to receive the most modern equipment and have greater chances for training than other regular units.

The PLA also deploys motorized vehicles, electronic warfare equipment, and modernized logistic support to RRUs to enhance force mobility and long-range deployment. Moreover, the PLA requires every soldier in an RRU to undertake additional special training, including swimming, skiing, and mountain climbing. Infantry soldiers with service above two years should be proficient in every weapon system assigned to the company units (Yang & Liao, 1999, p.50). In order to increase combat capability and cope with the requirements of future conflicts, the RRUs have conducted various joint exercises since 1995, emphasizing particularly long-range and intraregional rapid mobile deployment. In the Nanjing MR (military region specifically responsible for Taiwan), a three-phased joint exercise with its RRU was conducted from March 8 to 21, 1996, in the Taiwan Strait. The exercise was concurrent with the first direct ROC presidential election and aimed at influencing the outcome of the election and enhancing the operational readiness of the RRU. In addition to the firing of M-9 missiles and a blockade drill, the RRU focused on practicing its amphibious landing ability, on Pingtan Island, as well as an airborne exercise Another RRU exercise was conducted the following November in Anhui. One noteworthy point, during the exercise, all the ground forces were rapidly

transported by railway and vehicles to the exercise region (p.53). Certainly, this training was designed to test the mobility and combat readiness of the RRU.

Gurtov and Hwang state that there are two strategic decisions that guide the RRU's role in border conflicts (1998, p.108). First, the RRU will be sent to the area where the conflict initially occurs. The deployment of an RRU serves as a tool to building an in-depth line of defense to repel invasion or internal disorders from the PRC frontier, thus allowing decision makers to have more flexible time and options to solve the crisis. Second, the creation of an RRU can increase the PRC's ability to execute an active defense in external environments such as the Korea peninsula, South China Sea, and Taiwan Strait. The RRU's rapid deployable ability can enhance the PLA's commitment to carry out an offensive, and "strike first" strategy.

3. Army Special Forces

Historically, the People's Liberation Army had some highly skilled units consisting of specially trained and equipped soldiers to conduct various guerrilla warfare missions such as tactical reconnaissance, raids, penetrations, and the capture of valuable enemy personnel. However, it was not until the 1990s, when the PLA shifted its strategic doctrine toward "Local War under High-Tech conditions" that the PLA finally possessed a dedicated Special Forces.

After observing the successfulness of coordination between special forces and conventional forces in achieving a decisive victory during the 1991 Persian Gulf conflict, the PLA started to realize the importance of relatively small but well-trained forces with high-tech weaponry in modern warfare. Therefore, the PLA has devoted considerable resources to the development of its own special force units.

In the early 1990s, the first SF unit of the PLA was established in the Guanzhou military region. By the end of the decade, a regiment-level Army Special Force consisting of three battalions was well developed in every military region as a rapid reaction unit, directly under the regional headquarters command. According to Yang & Liao, the total strength of Army Special Forces is estimated as high as seven regiments and twenty-four battalions, or approximately 25,000 personnel (1999, p.52). Each ASF unit is equipped with the most advanced weapons systems, remote-piloted vehicles

(RPV), night-vision goggles (NVG), and a GPS satellite communication system, equivalent its western counterparts.

The 2000 U.S. annual DoD report to Congress on PRC military power stated that in the initial stage of a conflict, the ASFs are most likely to carry out key missions: (p.28). First, even though the PLA is undergoing a series of modernizations, it is still inferior to some of Western countries in certain support technologies such as surveillance equipment and satellite technology. Nevertheless, the ASFs still can conduct long-range reconnaissance and battle damage assessment to provide commanders timely and crucial intelligence. Second, with proper transportation, ASFs can successfully penetrate the enemy's line, locate the enemy's transport-nodes/logistical depots, and destroy them prior to the actual attack. Third, ASFs are capable of conducting surprise attacks or raids on airfields, ports and air defense systems to delay the enemy's response to the actual operations. Finally, the highly trained ASF can execute an information operation mission or destroy C4I assets, thereby, crippling the enemy's command, control and communication system.

As a part of the PLA ground force's rapid reaction units, well-equipped, highly trained, and professional special forces are one of the greatest instruments supporting the PLA's capabilities of power projections and operations in mainland China's peripheral regions during a small-scale and short period conflict. The objectives of Army special forces units are to destroy the crucial military infrastructures of adversaries. If deployed correctly and timely in collaboration with conventional forces, ASFs can certainly cause the ROC serious damage if a conflict should arise.

The continuous build-up of the People's Liberation Army's Rapid Reaction Units and Special Forces has made significant impact on PRC. First, the RRUs are mission-oriented task forces designed to meet the PLA's revised doctrine and to deal with peripheral threats, especially in the Taiwan Strait, the South China Sea, Tibet, and Xinjiang. Furthermore, they provide an option for PRC leaders other than the use of the People's Arm Police (PAP) to quell future domestic disturbances, such as Tiananmen Square in 1989, in the future. As for the scenario of a Taiwan Strait military confrontation, PLA decision makers perceive the possibility of U.S. involvement during a

protracted conflict. The deployment of ASF and RRU could execute a fast-paced, rapid, and decisive engagement, destroy major ROC defense assets and implement information operation. If those objectives were successful accomplished, the ROC forces could be severely damaged or crippled. The PLA would then have a greater chance of ending the conflict within a short period of time, which would ultimately reduce the possibility of U.S. involvement.

B. PLA NAVY

1. Background

The Chinese Navy, the People' Liberation Army Navy (PLAN), was established in 1950, with from some of the remaining fleet left by the Nationalist Navy and help from the Soviet Union. According to Mao's "People's War" doctrine, the PLAN was considered only as an extension of PLA ground force for seaward and coastal defense, and, its development was therefore strongly directed by that maritime strategy.

Since 1985, the PRC began to emphasize littoral defense and a limited maritime peripheral war, and, the PLAN's importance in national defense significantly increased. Its equipment is being modernized more quickly than the other services even though the size of the Navy is relatively small. The objectives of Navy modernization program are to assure mainland China's role as a regional maritime power in East Asia, to protect coastal economic regions and interests, and to optimize the PLAN's operation in national defense (Cole, 2000, p.279). More important, a competent the Navy is increasingly viewed by senior leadership as an ultimate solution to the Taiwan issue and to territorial disputes in the South China Sea.

The U.S. decision to dispatch two aircraft carriers during the Taiwan Strait missile crisis in 1995-1996 proved to the PRC the likelihood of United States involvement in future conflict across the Taiwan Strait. The PRC leaders realized that if a use of force is inevitable in achieving reunification, a U.S. intervention must be considered accordingly. Therefore, in the meantime, the PLAN is developing its long-term naval operation capacity to achieve reunification and regional hegemony, and is particularly interested in pursuing an ability to deter U.S. involvement if a conflict should arise. This chapter will address the PLA Navy's modernization progress, its impact on the

ROC, and the possible asymmetric deterrence of the United States in future Taiwan Strait crises.

2. Active Offshore Defense

Traditionally, the Navy was regarded as a ground force acolyte and, therefore, the PRC's maritime strategy was focused on offshore defense. However, an increase of threats from China's maritime peripherals as well as the Taiwan issues and China's economical interests in the South China Sea, caused the PLA to shift the to an Navy active offshore defense.

According to Cole, the modern PLAN maritime strategy was primarily the vision of General Liu Huaqing who served as Central Military Commission (CMC) vice-chairman from 1988-1997. During his term, his desire to expand Navy's operation to "active offshore defense" had a deep impact on the emerging modern naval strategy of the PRC (2001, p.165). In his view, the modern PLAN development should be divided into a three-stage process consisting of two maritime areas. The first area, also known as "First Island Chain", includes the Yellow Sea, the western East China Sea and the South China Sea. These regions are most vital to PRC national interests because of territorial disputes, oceanic resources, and coastal defense. In the "Second Island Chain", the Navy is expected to extend its influence and national power out approximately 1,800 nautical miles (nm) from the coast of mainland China which will include the East China Sea by 2020. These regions will be marked as second maritime areas. The final stage in Liu's theoretical vision is that, by 2050, the People's Liberation Army Navy should be a global force with aircraft carriers. The Naval forces by then should have the capability to conduct force projections throughout the world.

Liu's vision portrayed the PLAN's intended development for the years to come. However, to go beyond "First Island Chain", the PLA will require a strong naval force capable of conducting force projection in the brown or even blue water. In addition, the extended range will require more advanced weapons systems to respond to all methods of attack. Currently, although the PLAN is undergoing a relatively fast modernization, it does not yet possess such capabilities. In order to diminish this deficiency, the active offshore defense also called for greater mobility and the use of surprise or preemption in a contest with a strong opponent. According to Cole, "sea denial is a particularly

attractive option for a small naval power in littoral waters, if it has access to mines, missiles, small surface ships and submarines" (2001). He further stated that within a Taiwan Strait scenario, the most practical options for the PLA Navy are the employment of Information operation and preemptive strikes (2001, p.174). Both options target a specific naval threat or adversary, find out its weakness, and then exercise the PLAN's current capacity to destroy or delay an adversary. Clearly, this strategy will require a full understanding of the opposing force's weaknesses and strengths. The recent Navy foreign procurements and indigenous productions are primarily focused on the ability to conduct asymmetric warfare against a U.S. intervention in a future Taiwan Strait conflict.

3. Feet Modernization

a. Surface Combatants

The PLA Navy is the third largest naval force in the world. It currently possesses approximately 40 major frigates and 20 destroyers. However, like the PLA Air Force, most of those surface battleships are aging, Soviet-designed equipment that stand hardly a chance in competing with Western adversaries or countries in East Asia (Howard, 1999). Although the fleets have been retrofitted, remodified, and upgraded with Anti-Surface-Cruise-Missiles (ACSM), they still have a very limited Anti-Submarine-Warfare (ASW) capability or air defense capability and, therefore, would not last long in a naval battle.

Since the mid-1980s, the PLAN has made significant efforts to modernize its fleet as well as training. Many old-style surface ships have been replaced by new-generation combatant fleets through foreign acquisition, reverse engineering, or indigenous producing. The *Luhu*-Class (Type 052) fleet was first commissioned in the mid-1990s. Although only two of these have been built, they are the PLAN's first gas turbine-powered warships with engines imported from the United States (Cole, 2001, p.100). Each *Luhu* carries two French helicopters, 32 French Surface-to-Air-Missiles (SAM), German electronics, French radars, and Italian torpedoes. This combination of imported weapons systems makes maintenance and operation of the vessels extremely difficult (Shambaugh, 2004, p. 268). Nevertheless, the two ships have better anti-submarine-warfare capability than any others.

Following the *Luhu*, the first *Luhai*-class ships were introduced into the Navy in 1999; they were built domestically in China, but with much of the equipment imported from overseas. The PLAN claims that a significant characteristic of *Luhai* is its stealth, invisible from radar detection, though there is some evidence that statement is false (Cole, 2001, p.101). Moreover, although the *Luhai* is more advanced than the *Luhu* in many aspects, its lack of effective air defense and anti-submarine-warfare make it vulnerable to both air and underwater attack.

One of the most, if not the most, important surface fleet the PLAN ever acquired is a Russian *Sovremenny*-class destroyer. Two were purchased for $420 million each between 2000 and 2001 with two more on order (DoD report, 2004). The *Sovremenny* is the most advanced destroyer in the Russian inventory capable of anti-ship, anti-air, and anti-submarine warfare. More important, the *Sovremenny* was designed during the Cold War for the specific purpose of escorting Russian aircraft carriers and destroying U.S carriers and their Aegis escorts.

The most deadly weapons on board the *Sovremenny* are Sunburns (SS-N-22) sea-skimming anti-ship missiles. The Sunburns were specifically designed to destroy the defense of carrier battle groups. According to Shambaugh, this type of anti-ship missile has a range of 120 miles, flying 1.2 meters over the water (2004, p.267). It is the most advanced weapon for destroying aircraft in the world, and there are limited countermeasures. Therefore, it is also known as the "carrier killer" for its lethality to an aircraft carrier.

The decision to purchase two *Sovremenny*-class destroyers was mainly a result of the Taiwan Strait crisis in 1996, when the United States dispatched two carriers east of Taiwan (Shambaugh, 2004, p.267). The PLAN realized that the possibility of challenging U.S. naval power was impossible since the PRC could not compete in defense spending with the United States. Therefore, by acquiring the *Sovremenny* with its advanced weapons, the PLAN is hoping to achieve at least two objectives. First, the *Sovremenny* can reinforce a U.S. impression of an increasing threat from the PRC's asymmetric warfare ability. The psychological impact might lower the United States' will to defend the ROC. Second, if the United States decides to intervene when a conflict

arises, by deploying *Sovremenny* against a possible U.S. aircraft battle group's avenue of approach, the PLAN can certainly delay the U.S. response. Therefore, conducting a rapid and surprise attack to seize Taiwan, would probably force the United States to withdraw it forces. This explains why, after 1996, the PLA has oriented its training and foreign procurement in anticipation of a future U.S. intervention in the Taiwan Strait.

b. Submarine & Anti-Submarine Warfare

Overall, the PLA Navy's current underwater-forces inventory has seventy-seven tactical submarines consisting of one strategic ballistic missile submarine (SSBN), five nuclear-powered attack submarines (SSN), one diesel-powered cruise missile submarine (SSG), and numerous diesel attack submarines (SS) (James, 2004). Quantitatively, the PLAN submarine fleet is a formidable force and poses a grave threat to neighboring countries and the United States. However, qualitatively, except for a few of its strategic ballistic missile submarine and fast attack submarine, the remainder of its underwater fleet is antiquated and obsolete.

The Soviet *Romeo*-class submarines which first entered into the Chinese service in 1969, is considered as an easy target because of its poor ASW capability and noisy engine. Unless deployed in large number, the *Romeo*-class subs have almost no value in undersea operations in the Taiwan Strait. As part of PLAN's effort to modernize itself since the 1980s, it phased out several *Romeo*-class subs with the remaining twenty-six in various states of operational status. Using the reverse engineering from *Romeo*-class subs, the PLAN indigenously manufactured another two submarines. The *Ming*-class sub was commissioned in early the 1970s. Although it is a somewhat upgraded version of the *Romeo*, it is also antiquated and cannot do much unless deployed to gain quantitative advantages (Shambaugh, 2004, p.273). The *Song*-class sub has been in service since 1999 as a result of modifications of the *Ming*-class. It was designed with a quieter engine and equipped with YJ-82 Anti-Surface-Cruise Missiles (ASCM) for better offensive ability. However, the *Song*-class, too, is insufficient for modern undersea warfare; therefore, the number of *Romeo, Ming, and Song*-class submarine is expected to decline with the delivery of the *Kilo*.

The acquisition from Russia in 2002 of eight additional *Kilo*-class submarines suggests that the PLA Navy continues to view diesel submarines as a core

asset. Together with the four *Kilo*-class submarines already in the PLAN inventory, the twelve *Kilo* diesel submarines will comprise a formidable force. The *Kilo* carries wake-homing and wire-guided torpedoes, advanced acoustic sensors, and sonar-quieting countermeasures (Shambaugh, 2004, p.273). It is a very capable submarine and will be a significant disadvantage for ROC security since the ROC Navy lacks anti-submarine-warfare (ASW) capability.

The PLAN began its nuclear submarine program in the late 1960s and has already deployed five *Han*-class (Type 091) first-generation nuclear attack submarines and a *Xia*-class (Type 092) nuclear ballistic missile submarine (DoD report, 2000, p.27). The *Han*-class was laid down in 1974, but due to its serious reactor and other logistical problems, all of them are based with the North Sea Fleet and rarely go out on mission. Currently, the PLAN is actively pursuing successors to its problem-causing first-generation fast attack submarine (SSN). The first Type 093 is under construction, with a possible commission date of 2005. This second-generation SSN will be technologically similar to the Russian Victor III or U.S. Los Angeles-class submarines for its sonar capabilities and advanced quieting systems. A Chinese report claims that the Type 093 will be equipped with Russia's Type 65/DT/Dst 92 wake-homing torpedoes, specifically designed to destroy aircraft (Goldstein & Murray, 2004, p.171). Three additional Type 093 submarines are expected to be completed in 2010 and based with the East Fleet, which is responsible for Taiwan Strait naval operations.

According to Shambaugh, the single strategic ballistic missile submarine (SSBN), *Xia*-class joined the PLA in 1988, after sixteen years of development. Though the *Xia*-class has just emerged from a major overhaul, it is still capable of carrying 12 Ju Lang-1 solid-fueled intermediate-range ballistic missiles (SLBM) with a range of nineteen hundred kilometers. In addition to JL-1s, the *Xia* carries YU-3 torpedoes (2004, p.272). Another SSBN, the Type 094, is expected to be commissioned within this decade. The Type 094 is in many ways similar to *Xia*, but differs from its carried SLBM. It is equipped with the modified DF-31, which is a Ju Lang-2 (JL-2), capable of ranging twelve thousand kilometers (DoD, 2000). Although it has reportedly encountered several problems, once operable, the 094 will increase the PLAN's sea-based deterrent.

One of the most credible motivations for the PLA Navy to develop submarine-launched ballistic missile (SLBM) equipped on SSNB was revealed by General Xiong Guangkai, the PLA deputy chief of staff for intelligence. During the 1996 missile crisis, he publicly announced that "the United States will not defend Taiwan because the Americans care more about Los Angeles than Taipei" (Erikson, 2003). His statement clearly and boldly implied that, if the United States were involved in a future Taiwan Strait conflict, the PLAN then would not hesitate to use its SLBM against the continental of United States. The possession of 094s equipped with JL-2s now certainly serves to intimidate and deter the United States.

4. Amphibious Unit

The PLA has demonstrated an increasing effort in training its forces to practice amphibious assaults. Since 1994, the PLAN and other branches have conducted several joint-operation exercises, with amphibious maneuvers on some of its coastal islands. However, so far the PLA clearly does not possess enough sea-lift and air-lift capability to launch an amphibious operation against the ROC. According to convention wisdom, for a successful amphibious operation, the assault forces need five times more troops than the defenders. In the Taiwan Strait conflict, since the ROC army has 200,000 personnel, the PLA must be able to dispatch more than one million troops for a chance of success in an amphibious operation. Currently, the PLAN has approximately seventy or so amphibious ships and could not transport more than 10,000 to 15,000 troops at one time (O'Hanlon, 2000, p.62), far more short of the force needed to establish beachheads on the heavily guarded, rough terrain on the western side of the island. The lack of a means to transport troops is the biggest constraint to the PLA's amphibious operations against the ROC in the near future.

Nevertheless, in spite of its lack of sea-lift capability, the PLAN does have a capable force for amphibious operations. The current strength of the Marine Corps is two brigades with approximately 10,000 troops under the command of the South Sea Fleet. They are not assigned to the East Sea Fleet, which has operational responsibility for Taiwan, because the lack of training facilities. According to Yang and Liao, the PLAN Marine Corps is one of the PRC elite rapid reaction units equipped with Type 63 amphibious landing tanks, Type 7711/7712 amphibious armored personnel carriers

(APC), Type 54 artillery, and HJ-73 anti-tank missiles (1999, p.52). Because of the small size of the force, the Marine Corps is trained to operate independently for only a short period of time, and therefore, in order to survive, must be part of a larger invading force. Although it is unlikely that the PLA will launch a Normandy-type of invasion, for the past few years, the frequency and scale of amphibious operation exercises have increased and have expanded beyond the Marines to include regular ground forces, with an estimated three divisions now available for a sea assault (Godwin, 1997, p.218). The joint exercises showed that the Marine Corps is most likely to be a vanguard unit to establish the beachhead during the first phase of the invasion, followed by the rest of the ground forces and logistical supply troops. If the ROC forces fail to block the amphibious troops from disembarking on the coast of Taiwan, once the Marine Corps establishes the beachhead, the troops that follow will cause significant problems for the ROC.

Overall, the PLA Navy has understood well its weaknesses and it strengths in regard to the Taiwan Strait. First, although the PLAN enjoys overwhelming numerical superiority over most potential adversaries, large portions of its fleets are obsolete. Second, the multinational acquisition of its equipment and parts could cause serious integration and maintenance problems in the near future. Finally, insufficient sea-lift transportation has limited the PLAN's ability to conduct amphibious operations against the ROC. To solve those issues, the Navy is diligently pursuing asymmetric advantages over the ROC, and the United States in case of their intervention. The purchase of two *Sovremenny*-class destroyers and the development of JL-2 submarine-launched ballistic missiles can served as excellent examples. As the PLAN modernizes its forces and gradually moves toward a blue-water navy, it will not only be a serious threat to the ROC but also the sole challenger to the United States in Asian-Pacific regions.

C. PLA AIR FORCES

1. Background

The Chinese Air Force, full title, the People's Liberation Army Air Force (PLAAF) is the third largest in the world, next to the United States and Russia. The PLAAF was formally organized in 1949, when the Communists gained control of mainland China.

The 1950s were a period of rapid modernization with help from the Soviet Union which supplied large numbers of jet aircraft and provided aircrew training. The PLAAF saw some impressive action during the Korean War and the Taiwan Strait Crisis in the 1958. The abrupt withdrawal of Soviet advisors and assistance in the summer 1960 left a wide variety of industrial projects unfinished, though the PRC already had some technological ability in jet aircraft production. By the late 1960s, PLA Air Force was able to begin production of a range of Soviet designs, including fighter aircrafts, bombers, transport aircraft, and helicopters.

For decades, the Air Force was only considered as an operational tool to provide fire support and cover for both ground and naval forces. It had no identifiable strategy of its own. However, the air operation of the Gulf War in 1991and later the Kosovo air campaign were wake-up calls for PRC military strategists and leaders. The world witnessed that advanced airpower can inflict massive damage on the adversaries, a mission goal are thought as primarily the responsibility of ground force. After intensive analysis, the PLAAF started a dedicated effort to modernize its forces and to overcome technologically advanced opponents, particularly the ROC.

Today the PLAAF has about 420,000 personnel in all, with five branches: aviation, anti-aircraft artillery (AAA), surface-to-air missiles (SAM), radar, and airborne (Allen, 2002, p.346). As the result of PLA overall force reduction and military modernization, the Air Force has introduced some momentous advances in terms of both its service hardware and its capability. During the past decade, the PLAAF signed a contract with Russia for SU-27 and SU-30 fighters and with Israel for Airborne Warning and Control system (AWACS). In addition to the progress in combat aircraft, the PLAAF is also quickly developing and enhancing its capabilities in several high-tech areas such as aerial-refueling tanker aircraft, airborne electronic-warfare/countermeasures aircraft, long-range transport aircraft, and unmanned aerial vehicles (UAV). The air defense system was also improved dramatically when several Russian-made surface-to-air missile, anti-aircraft artillery and radar systems were integrated into the service.

The primary purpose of PLAAF modernization is to overcome the ROC's technological superiority in the air. Although the PLAAF is still generally regarded as

obsolete compared to Western counterparts, it has made impressive progress during the past decades. The continuous effort for modernization will increase the PLAAF's capabilities in fighting a limited local war under high-tech conditions. Furthermore, the strength of combat readiness of the 15th Airborne Corps will also pose a lethal threat to the security of the ROC. If the hardware improvements and pilot- training keep a steady progress, the PLAAF is expected to play a major role in any future military conflict in Taiwan Strait.

2. Change of Doctrine, Preemptive Strike and Surgical Operation

Traditionally, the priority mission of the PLA Air Force was confined to merely territorial defense due to the low technology of its aircraft. The short radius (200-500 kilometers) of its fighter planes restricted the pilots to limited maneuverability and, therefore, conducting only a passive defense. However, with foreign acquisition and indigenous production of advanced fighters, the PLAAF is learning to be a modern force capable of carrying out both an offensive defense and conducting in-depth strikes into enemy territory.

The outcome of the 1991 Gulf War had a manifold effect on PRC military leaders. First, it allowed the PLA to understand the vulnerability of the Iraqi force's passive-defense posture. If the Iraqi forces had conducted an attack before the majority of the Allied troops were in combat readiness, it would have gained the initiative in the battle, and, therefore, have avoided a shameful defeat. Second, the outcome also revealed the importance of air superiority in modern warfare. The coalition forces utilized its advanced aerial technology to target and destroy Iraqi ground forces, as well as the major infrastructures, prior to the full-scale ground attack. The lesson of the Gulf War caused China's 1992 doctrinal shift to "Limited, Local War under Modern Conditions" within the PLA.

For the PLA Air Force; the implementation of the new doctrine in the Taiwan Strait focused on the concept of a pre-emptive and surgical strike. When the use of the force is inevitable, the PLAAF would employ a pre-emptive strike using modernized technologies such as the space satellite program in the PLA to block the take-off of ROC aircraft and pinpoint the bombing of air bases, thus reducing the number of the ROC Air Force's advanced fighters and thereby gaining air superiority.

3. Aircraft Modernizations

a. Fighters

Among its extensive inventory, 2,200 of 3,000 total fighters are antiquated J-6s and J-7s that were built locally in the 1960s (Shambaugh, 2004, p.258). The J-6 series fighters are deployed at PLAAF bases throughout the mainland China, but particularly in airfields directly across from the Taiwan Strait. Although the PLAAF's J-6 aircraft have numerically outnumbered the ROC Air Force's F-16, Mirage, and IDF, J-6s only have a small combat radius and short-range weapons, and therefore, most are qualitatively inferior to ROC aircraft (Table 1).

Table 1. PLAAF Fighters

Fighter	Entered Production	Number in Force in 2000	Number in Force Projected for 2005
J-6	1963	1,800	500
J-7	1967	500	300
J-8 II	1970	150	100
J-10	2005	0	100
JH-7	1995	20	100
Su-27	1999	72	150
Su-30	2001(?)	0	100(?)

Table 1. (From Shambaugh, 2004, p.264).

Under the new doctrine of "limited, local war under high-tech conditions", the PLAAF realized that the force structure and aircraft must be revamped to gain air superiority in conflicts to come. In line with this new strategy, the PLAAF started to adjust the mix of its order of battle and to retire large numbers of obsolete aircraft. Allen stated that, "by the year 2010, the PLAAF's fighter force will most likely consist of between 1,500 and 2,000 aircrafts, with almost the entire J-6s and early model J-7s retired. These aircraft will be complemented by and then replaced by the J-11 (Su-27), J-

10, and Su-30" (2000, p.215). This new order of battle is specifically designed to counter the ROC's air force formation. According to You, "the Su-27s and Su-30s will be deployed against Mirage-2000s for long-range and high-altitude strike missions; the J-8 IIs against F-16s for medium-range and medium-altitude missions; and the J-10 against the IDF for short-range and low-altitude missions" (1999, p.135).

The failure of the PRC's aircraft industry to produce indigenous modern-fighter interceptors left the PLAAF no choice but to look for foreign procurement to meet its needs in the Taiwan Strait. In November 1992, the PRC signed a contract with Russia for the purchase of 72 Su-27 Flanker fighters and the training of Chinese pilots. Twenty-six of the Su-27s were delivered to central China. The reminding of 48 were delayed because of a disagreement about payment between the two countries, but the planes finally arrived in Guangdong province in southern China across the Taiwan Strait (Shambaugh, 2004, p.262). The PRC also signed a coproduction right of two hundred Su-27s (designated the J-11 by the PLAAF) at Shenyang over a ten-to-fifteen year period. Once the PLAAF successfully acquires those nearly 300 Su-27s, the PRC may have overcome its technical weakness in an air war with the ROC, whose security depends on a technological edge.

In the Su-27s, the PLAAF has obtained its first fourth-generation combat aircraft comparable in performance to Western counterparts and the ROC Air Force. The Su-27s flight profile and armament are similar to those of the F-14, F-15, and Mirage 2000. However, there are still some logistical and training problems that need to be solved before the PLA Air Force can maximize its capabilities. First, the Su-27 pilots have little training time, approximately twenty hours a year and always conducted in daytime during good weather. Second, most of the trainings have been offshore exercises; the pilots have never trained for long-range and high-altitude dogfight missions that the plane was originally designed for. Third, the coproduction of the J-11 fighters is still way behind schedule. The Shenyang factory was expected to produce fifteen more before 2002 and, after that, a serial production was to begin. However, the goal could hardly be reached, given that only six were produced between 1998 and 2000. The delay of production in Shenyang could potentially weaken the PLAAF's order of battle during the transition period (p.263).

In December 1999, the PLAAF also acquired 40 Su-30s from Russia. This new type of fighter has all the air combat capability of the Su-27, and also possesses an all-weather ground-attack ability and is capable of launching air-to-surface cruise missiles (DoD Report, 2000, p.23). It is believed that by the year 2005, the total number of Su-30s in the Chinese Air Force inventory could be as many as 100.

b. Bombers

Historically, the ground attack aircraft of the PLAAF has been limited in terms of both quantity and capability; however, the situation is changing now as more sophisticated bomber aircraft and weapons systems enter the service. The PLAAF has two principle ground attack aircraft in its inventory, the H-5 and the H-6. There are 200 and 120 on duty, respectively (Shambaugh, 2004, p.265). The H-6 was the first bomber to enter the PLAAF in 1959. Although it is obsolete and is vulnerable to most of the ROC's fighters, the PLAAF still keeps it in commission with a few adjustments. According to Fisher, the modified H-6 is now capable of carrying several Land-Attack-Cruise-Missiles (LACM) including the YJ-63 and C-601/C-611 series (2003, p.153). With this capability, the PLAAF could start an initial assault on ROC air bases and command center as a pre-emptive strike. In addition, a U.S. DoD Report also points out that the PLAAF is developing an improved version of the FB-7 which has a capability of conducting all-weather, supersonic, medium-range, and anti-ship missions (2000, p.23). However, it is unlikely that the FB-7 will affect the Taiwan Strait for at least for two decades since it is behind schedule.

c. Transport Aircraft

The PLA's air transport capability relative to its ground and air forces is very limited for support of a major conflict. So far, there is no sign that the PLAAF can acquire sufficient air transport equipment to carry out a large-scale airborne operation in a Taiwan Strait conflict, or anywhere in the near future.

Prior to the 1990s, the PLAAF relied heavily on the Y-8 transport for military transportation missions. In the early 1990s, the PLAAF acquired ten I1-76 transport planes and an additional twelve were purchased later. During a March 1996 exercise, the PLAAF used I1-76s as primary transportation to drop paratroopers, but they were limited to a small-scale exercise due to the lack of sufficient aircraft (Fisher, 1999,

101). Besides 22 I1-76s, the PLAAF also possesses 25 Y-8s, and about 41 Y-7s in its inventory. There are also two C-130 transports but they are operated by a civilian company (Fisher, 2003, p.161). In a time of crisis, the PLAAF could be supplemented by the PRC's civil aviation fleets, which include jet airliners, utility aircraft, and helicopters. In the scenario of a Taiwan Strait conflict, since there is no direct flight between mainland China and Taiwan, the Hong Kong-owned airliners could be used to transport troops in a first-wave surprise operation and to seize the airports, followed by PLAAF transports, assault helicopters, and civilian cargo jets (p.163). However, there are limits to the use of civil aircraft to ferry troops into a hostile environment.

d. Special Mission Aircrafts

The combat fighters and other systems that the PLA has either purchased through its foreign acquisition program or produced indigenously will not operate in isolation but as a part of larger the PLAAF. To maximize the utility of the latest fighters such as theSu-27, Su-30, and J-10, the PLAAF has dedicated considerable effort to ascertain that these fighters are well supported by, and integrated with, special mission aircrafts.

The PLAAF has been keen to purchase and develop unmanned aerial vehicles (UAV) for its armed forces. So far, the Air Force possesses a number of short- and medium-range UAVs in its inventory. Current roles of UAVs in the service are limited to the fields of reconnaissance, surveillance, and electronic warfare (DoD, 2004, p.35). Evidence shows that the PLAAF is improving the capacities of its UAVs to go beyond China's coastal waters in order to scout Taiwan's coastline and determine potential debarkation point.

Since the mid-1980s, the China has been eager to obtain an airborne early-warning and control system. The AWAC can provide near-total awareness of the air combat environment to assist aerial operations against Taiwan, or the U.S. forces, or in the South China Sea. According to You, the AWACs technology may multiply the PRC's air defense by 15-55 times and increase the interception rate by 35-150 percent (1999, p.149). Therefore, a small number of AWACs may be more efficient in detecting hostile low-flying aircraft into PRC territory than a larger number of ground-based radar. Driven

by offensive and defensive causes, the PRC has pursued the AWACs through both foreign purchase and domestic research channels.

The PLAAF initially tried to purchase four Israeli PHALCONs in 1999 but that acquisition was cancelled due to serious pressure from both the United States and Russia. As a second choice, the PLLAF then turn to the Russian-made A-50s which is the most advanced version of its AWAC inventory. The AK RLDN radar system on board is capable of detecting a bomber-size target at 650km and a fighter at 300km, and of tracking up to 300 targets and commanding 12 fighters (Fisher, 2003, p.158). In addition to foreign acquisition, the PLA has indigenous AWAC already in the service. Its original Y-8 transport aircraft are now modified and equipped with British SKYMASTER aerial early-warning radar. From higher altitude, the Y-8 can potentially detect targets up to 200 and 400 miles wide (Lilley & Shambaugh, 1999, p.156). If the PLAAF successfully integrates both AWACs with its current advanced fighters, the A-50 may be deployed to support an air operation and the Y-8 to support a naval operation near the Taiwan Strait. This may be sufficient to cover the entire war zone if a conflict should arise and would be unfavorable to ROC defense.

4. Airborne Corps

According to Jane's Document View, the PLA 15th Airborne Corps is the largest unit that is directly under control of the Central Military Commission in time of emergency, but normally under control of the PLA Air Force (2004). Currently, the 15th Airborne Corps is composed of three airborne divisions with a total of more than 30,000 troops. Several sources indicate that the PLA is planning to increase its airborne forces to another corps, the 16th Airborne Corps. However, this has not yet been confirmed.

The Airborne Corps is considered a reserve force from a strategic point of view, but in the scenario of the Taiwan Strait, the mobility and readiness of the airborne force means it could be deployed as the first wave of attack. Geographically, the terrain of Taiwan is narrow, with mountains in the center that divide the island by west and east. Most of the major rivers run from east to west. If the 15th Airborne Corps should conduct a surprise attack and successfully penetrate the ROC's air defense to capture key targets such as bridges, highways, and airports, then the ROC's ground force would be isolated

into several theaters of war and could not transfer troops for reinforcement. This would cause severe damage to the ROC's ability for counterattack.

Such a surprise attack by the PLAAF would require thorough preparation and logistical support. So far, the 15th Airborne Corps does not yet possess the ability to successfully carry out large-scale airborne operations. Several problems must be solved. First, the lack of sufficient airlift aircraft to transport paratroopers is the Air Force's biggest restriction to conducting an airborne operation against Taiwan. As discussed earlier, the current transport aircraft in PLAAF inventory are not enough to handle rapid airborne operations, even if they include commercial airlines. According to O'Hanlon, the PLAAF has the capacity to airlift about two brigades' worth of paratroopers (approximately 10,000 personnel) in a sortie of its entire military airlift fleet. This size troop force could establish temporary control of an airfield or a port, but could not sustain control for a long time. If there were no reinforcements, the landing troops could be overrun by a ROC counterforce (2000, p.69). Without sufficient airlift capability, the 15th Airborne Corps cannot pose a significant threat to Taiwan.

Second, beginning in 1993, the Jing-Shi Program has reshaped the ROC military structure, relocated troops and consolidated armed forces, in order to facilitate future defense (Ding, 1999, p.268). The ground forces have been relocated based on the strategic importance of nearby terrain. The possible drop zones for an airborne operation, such as airports, gulf courses, or preferred targets like command centers, and logistical depots are surrounded by either an air defense system or heavily armed army ground brigade. An ROC anti-airborne strike can be launched within thirty minutes upon order. Therefore, the chance of conducting a successful airborne operation is relatively low during the daytime than at night. A night jump will require several extra advanced types of individual equipment such as a night-vision device. In addition, the 15th Airborne Corps limits itself to conduct exercises only in relatively fair weather (Fisher, 2003, p.199). The exclusion of inclement-weather and nighttime operations significantly diminishes the effectiveness of the 15th Airborne Corps.

The People's Liberation Army Air Force has undergo a dramatical modernization since the early 1990s. It has been transformed from a sub-branch of the ground force to

an individual, formidable, and organized unit capable of conducting a decisive air combat. The change of doctrine -to now carry out surprise, preemptive, and surgical operations- enable it to fight beyond PRC territory. After the special mission aircraft such as AWACs, tankers, and UAVs are fully integrated with the advanced fighters, the PLAAF will become an effective and efficient fighting force.

The 15th Airborne Corps is directly under command of the CMC as a rapid reaction unit. It is a highly trained unit and is equipped with several advanced weapons as compared to the entire PLA ground force. Although the PLAAF does not yet possess sufficient airlift capability, it might conduct a small-scale airborne operation to destroy the ROC C4ISR system or to seize airports under the shield of missile strikes by the PLA second artillery corps, and therefore present a more serious threat to the security of the ROC, Taiwan.

IV. PLA STRATEGIC FORCES

A. BACKGROUND

The PRC's strategic nuclear force was formally established on 1 July 1965. The Second Artillery Corps (SAC), also known as the Strategic Missile Force (SMF), maintains control over China's nuclear and conventional strategic missile forces, consisting of short-, medium-, long-, and intercontinental-range ballistic missiles (You, 1999, p.85). The SAC's Chinese name, the Dier Paobing was given it by the People's Republic first premier Zhou Enlai, to distinguish it from the regular artillery of the PLA ground force.

Structurally, the SAC is not an armed force branch like the PLA ground force, PLA Navy, or PLA Air Force. Instead, it is only a service arm and is a half-rank lower bureaucratically than the other services. Nevertheless, its command chain is directly linked to the CMC through the GSD. The SAC's importance for the People's Liberation Army can be understood clearly from two aspects. First, even though the SAC is the smallest service in the PLA, with approximately 90,000 officers and men, yet it receives 12 to 15 percent of the total PLA defense expenditure. In addition, it has been allocated 20 percent of PLA's total procurement budget (p.85). Second, in the mid-1980s, while other branches were significantly downsizing by over one million in response to Deng's force reduction plan, the SAC was untouched and actually grew. The primary cause was that, in the PLA elite's opinion, the only strategy capable of countering nuclear strikes from hostile countries was the PRC's possession of sufficient nuclear power: a strong SAC is the backbone of this strategy.

The SAC has played an important role in the PRC national defense strategy. Since its inception, the PRC has possessed a limited deterrence over its peripheral countries. Although the PLA emphasizes the concept of "No First Use" (NFU) for its SAC, significant efforts have been focused on developing high accuracy and mobility, and recently, on long-distance and sea-based launching platforms. Two reasons are contributed to these modernizations. First, the SAC will be a most effective and efficient force to conduct a surprise attack or psychological operation against the ROC. A

precision strike ability can pose a creditable threat or, if necessary, actually destroy the ROC's military infrastructures and decapitate its command center, thereby giving the PLA more options and ample time for further operations. Second, and more important, the SAC can also deter the U.S.'s will to intervene in the Taiwan Strait if a conflict should arise. The statement of one PLA senior officer that "the United States will not defend Taiwan because the Americans care more about Los Angeles than Taipei" clearly shows the PRC's motivation to develop its nuclear capabilities.

This chapter examines some select of current developments in SAC's short-, medium-, long-, and intercontinental-range ballistic missiles inventories and whether the continuous build-up of SAC capabilities would shift the PRC nuclear strategy from "minimum deterrence" to "limited deterrence". The threat that mainland China's SAC poses for the ROC will be discussed drawing on the case of the 1995-96 Taiwan Strait crisis.

B. DEVELOPMENT OF THE SECOND ARTILLERY CORPS

Throughout the 1970s and 1980s, the primary concern of SAC was "force consolidation" rather than practical operations (p.86). This was because all of the SAC's long-range ballistic missiles were stored in permanent locations with launching silos during this period of time and was vulnerable to an enemy's first nuclear strike. Major General Yang, a former SAC deputy commander, stated that the future direction of the PRC's ballistic-missile development must follow three aspects: first, improve the survivability of the strategic nuclear weapons. Second, improve the striking ability of strategic nuclear weapons, and third, improve the penetration technology of strategic weapons (Yang, 1998, p.134).

After identifying those defects, the SAC is now working industriously to increase the survivability of launching sites and the mobility of launching units. Aside from the effort to construct numerous miles of roads to link different launching sites and the wide-dispersing of SAC bases in deep inner China, the SAC has also developed a solid fuel propellant to reduce preparation time for launching missiles. In addition, the PLA invested heavily in improving its nuclear launching platforms to include both air- and sea-bases. These improvements are interrelated with the PLA Navy's and PLA Air

Force's modernization programs in nuclear submarines and bombers, respectively. The sea-based ballistic missiles operated by SSBN can be launched far away from the anti-submarine-warfare capabilities of any country, and therefore, pose a credible threat to Western countries, especially the United States. As for accuracy, the SAC is attempting to make some of its SRBM GPS-capable (Shambaugh, 2004, p.281), as well as compatible with Russian GLONAS (global positioning satellite system). The SAC has become one of the most advanced nuclear forces in the world and is the PLA's most efficient instrument in deterring U.S. intervention in the event of a PLA attack on ROC.

The SAC defines specific ballistic-missile types and ranges that are moderately different than other nuclear-capable countries (Table 2). In brief, the SAC has traditionally defined "tactical" missiles as those with ranges less than 1000 kilometers, whereas it considers "strategic" missiles to be those with ranges over 1000 kilometers.

PRC's Ballistic Missiles

System/Type	Status	Propellant	Estimated Range (km)	Estimated Number Deployed
DF-3/3A	deployed	liquid	2,800	50-120
DF-4	deployed	liquid	4,750	20-30
DF-5/5A	deployed	liquid	12,000-15,000	7-20+
DF-11/M-11	deployed	solid	185-300	40+
DF-15/M-9	deployed	solid	200-600	100-200
DF-21/21A	deployed	solid	1,800	20-40
DF-31	tested	solid	8,000	0
DF-41	under development	solid	12,000	0
JL-1	deployed	solid	1,700	12-24
JL-2	near testing	solid	8,000-10,000	0

Table. 2 (After Shambaugh, 2004, p.277).

1. Short-and Medium-Range Ballistic Missiles (SRBM), (MRBM)

According to Stokes, the SAC has deployed approximately 350 conventional SRBMs among three brigades opposite the ROC and it is estimated that the total number of ballistic missiles will increase to 650 within the next few years (2002, p.114). These missiles offer the PRC the most potent form of coercive capability against the ROC. Currently, the SAC has a number of SRBM in its inventory; all of them are dual-capable in carrying conventional or nuclear warheads. The major three key SRBMs are DF-15, DF-11, and DF 21/25 (See Figure 2 for PRC missile sites against ROC).

Locations of SRBM sites aimed at ROC

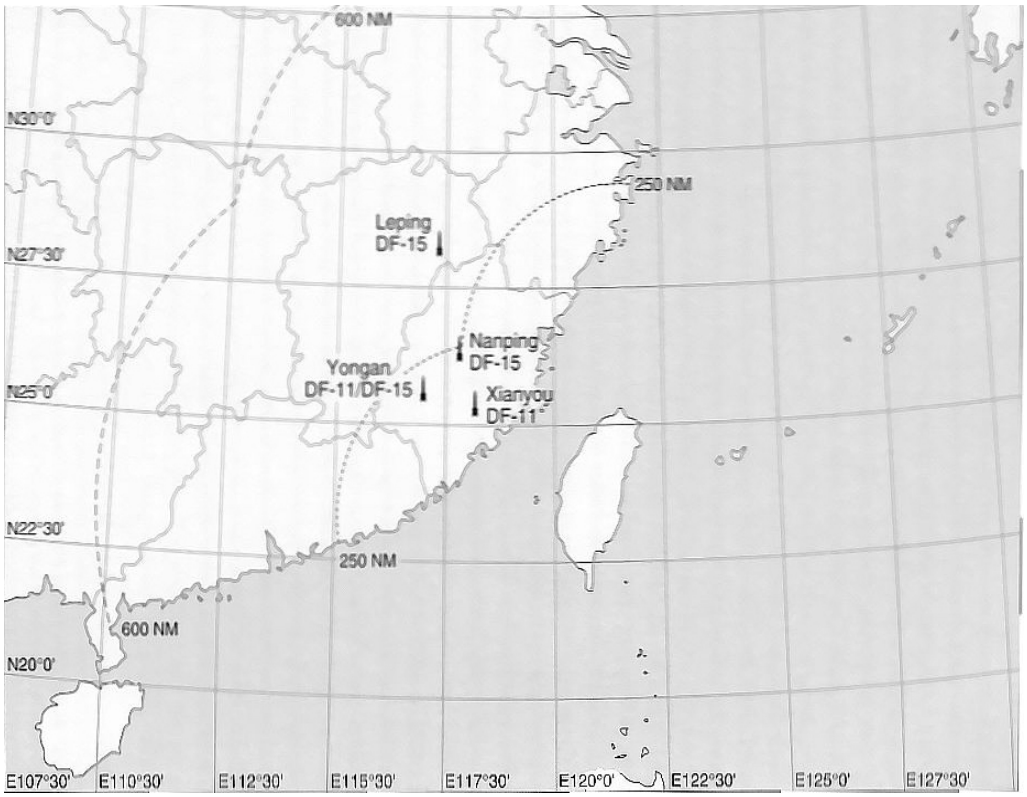

Figure 2. (From Shambaugh, 2004, p.317).

a. DF-15

The DF-15 short-range ballistic missile, also known as M-9, entered the SAC inventory in 1995 and has become a dominant part of its SRBM force. Currently, all DF-15 are deployed in Nanjing MR whose ARO covers the ROC. According to Jane's document view, an online resource, the DF-15 is a road-mobile, solid-propellant, and

single-warhead ballistic missile with a range of six hundred kilometers (2004). The DF-15 has a circular error probability (CEP) of 100 meters, but with a GPS guiding system, the accuracy can be amended to 15 meters and reduce its launch cycle to 15 minutes, making it one of the most accurate ballistic missiles in the world. During the 1995-96 Taiwan Strait crisis, the SAC conducted a series of group launches for a total of ten DF-15s into the north and south of Taiwan to intimidate the population. It was believe that SAC would be one of the chief means to affect a blockade of the ROC's waterways (You, 1999, p.93).

b. DF-11

The DF-11, also known as M-11, is the only land-base ballistic missile that is equipped to support the PLA ground forces (Liang, 2002, p.31). It has an ability to carry a payload of 800 kilograms for 300 kilometers. Even though the DF-11 has a relatively shorter distance range than the DF-15, it is more difficult for an active missile defense system to intercept. Moreover, the DF-11 is also a solid-fluid propellant and requires 30-45 minutes launching preparation. It has been reported that the PRC has intentionally altered the DF-11's range from 300 kilometers to 290 kilometers since 1996 to elude a restriction of arms exporting.

c. DF-21

The DF-21 is an intermediate-range ballistic missile with a range of 1,800 kilometers. It is also known as "Ju-Lang on Shore," because it was modified from the JL-1 sea-based nuclear missile. It became operational in 1987 and was the first SAC solid-fueled missile designed to be both road- and rail-mobile and is capable of carrying a 600 kg warhead. The DF-21 needs only a 10-15 minute launch preparation, and the SAC is working on equipping it with a terminal guidance system. If the SAC achieves this objective, the DF-21 would have the capability to strike a hanger in an airfield instead of the entire airfield. The long-range and better accuracy of the DF-21 could potentially pose a credible threat to U.S. forces stationed in Japan and Guan.

The JL-1, a variant of the DF-21, entered PLA Navy's service in 1988. The development of the JL-1 has a dual significance. First, it was the first PLA solid-fueled-propellant ballistic missile that reduced launch preparation time dramatically since no fueling was required. Second, it was the first sea-based missiles in the PLAN.

Although the PLA started to develop of a sea-based launching platform in 1967, the Cultural Revolution postponed the research until 1978. So far, the Xia-class SSNB is the only submarine equipped with 12 JL-1s targeting the eastern China Sea, including Japan and Southeast Asian countries, when deployed in the PRC's home waters.

2. Intercontinental and Intermediate Ballistic Missiles (ICBM), (IRBM)

Unlike tactical ballistic missiles for which the primary targets are military or political infrastructure, the most important purpose for strategic ballistic missiles is deterrence: targeting at an adversary's highest levels of politics, economics, social-psychology, and military. It is most unlikely that the PRC will deploy nuclear ballistic missiles against the ROC if a use of the force is needed for economical reasons. Thus, the primary purpose behind ICBM development is to deter any foreign nations, particular the United States, from intervening in the reunification with a retaliatory nuclear attack.

Currently, the PRC's ICBM force consists of a liquid-fueled DF-5 and DF-4 system, at least twenty among them are capable of targeting the United States and this number will reach up to sixty by 2010 (DoD, 2000, p.31). Both DF-5s and DF-4s are deployed in fixed underground silos and require a long time for launch preparation; therefore, they can be easily targeted and destroyed by a technologically superior adversary. To counter this shortcoming, the SAC is working diligently to pursue mobile and solid-fueled ICBMs. DF-31s and DF-41s will eventually replace the DF-4s and DF-5s within decades.

a. DF-4

The DF-4 was the PRC's first limited-range ICBM with a CEP of three kilometers and a range of 4,750 kilometers, capable of carrying 2,200 kg of payload (Shambaugh, 2004, p.275). The primary targets are the PRC's peripherals, including Russia, Japan, Southeast Asian countries, and Guam. It was first tested in 1970 but did not become fully operational until 1980. Like other intercontinental ballistic missiles, the DF-4 is stored in fixed silos, mountain caves, or tunnels and has to be brought to a surface vertical position prior to launch. The process requires a 1-2 hours of preparation time.

b. DF-5

Currently, with a range of 13,000 kilometers, the DF-5 remains the only ICBM capable of striking anywhere in the continental United States. It has a CEP of 0.5 kilometers and can carry a 3,200-kilogram warhead (p.278). So far, at least 17–20 DF-5s and its variant DF-5As are known to deployed and targeted at the United States. Like the DF-4, the DF-5 is solid-fuel, and therefore requires a long preparation time, which is its biggest disadvantage. Thus the PRC is expected to replace the DF-5 with the DF-31 within a few years.

c. DF-31

The DF-31, not yet in SAC's inventory, was successfully tested on August 2, 1999. It is expected to augment the PLA IRBM capability in 2005. The DF-31 can cover 8,000 kilometers which includes Alaska, Hawaii, the northwestern continental United States and northern Europe within its range. The DF-31 amends solid-fuel to a three-stage solid propellant, which dramatically reduces the preparation time to 15 minutes (Stokes, 2002, p.112). In addition, the DF-31 is estimated to carry a single warhead and could incorporate penetration aids, including decoy and chaff, which would, therefore, make it very therefore very difficult for a targeted country to track the missile.

Also known as "Dong Fong to Ocean", the JL-2 is a modified version of the land-based DF-31. As discussed earlier, the Type 094 nuclear submarine will be equipped with JL-2s which provides the PRC with the ability to make retaliatory strikes after the PRC has been attacked. The full incorporation of Type 094s and JL-2s will significantly increase the quality and credibility of the PRC's strategic nuclear deterrence.

d. DF-41

Currently, the DF-41 has not yet been flight-tested but it is expected to replace the DF-5 around 2010 (N/A, 2003). The DF-41 is estimated to have a range of 12,000 kilometers, and is capable of carrying an 800-kilogram payload with a CEP of 0.7 kilometers. Like the DF-31, it is a solid-propellant missile, and therefore, only requires a 5-minute preparation time prior to launch. In addition, some reports suggest that it will most likely be the first SAC ICBM to carry Multiple Independent Reentry Vehicles (MIRV) which will make extremely difficult to be intercepted (Khalilzad etc, 1999, p.40).

If the SAC actually acquires the MIRV technology, the DF-41 could be a formidable ICBM threat to the United States.

C. MINIMUM DETERRENCE AND LIMITED DETERRENCE

After the inception of nuclear power in 1964, the PRC did not have a coherent, publicly articulated nuclear doctrine for thirty years. It was in the 1980s that the PLA started to discuss strategies to link its nuclear arsenal to foreign policy and national-security objectives (N/A, 2003). Since then, the PRC's official stand on nuclear policy has been "No First Use" (NFU), which means the PRC will not be the first to use nuclear weapons at any time or under any circumstances (Shambaugh, 2004, p.90). The PRC also opposed the deployment of nuclear weapons outside PRC territories. In addition, the PRC has been especially critical of the use of a nuclear deterrence against non-nuclear-weapons states, and has repeatedly called on the nuclear-weapons states to agree to a legally binding, multilateral agreement under which they would pledge not to use, or threaten to use nuclear weapons against non-nuclear-weapons states.

By declaring a NFU policy, the PRC also adopted a defensive "minimum deterrence" as its nuclear doctrine. According to Iain Johnston, "the PRC believes that a small number of warheads sufficient enough to inflict unacceptable damage on relatively large cities constitutes a credible deterrent" (1995, p.10). The doctrine had much to do with the then-constricted resources and insufficient technologies of the PRC's nuclear forces. Therefore, the PRC nuclear force must be able to take an adversary's initial nuclear strike but still be able to retaliate. However, the modernization program since the mid 1980s has significantly increased both the range and the accuracy of PRC nuclear missiles. The development of sea-based platform ballistic missile on SSBNs further expands PRC nuclear-projection power. As Johnson stated, the increase of the PRC's nuclear ability shifts its doctrine to a more flexible and offensive "limited deterrence". The PRC are nearly ready to possess the capability to deter both conventional and nuclear wars as well as engage in escalation control (p. 12).

Looking ahead to the future, it is not clear if the PRC can actually present a significant threat to the United States after the establishment of a National Missile Defense system (NMD). As Stokes, Mulvenon, and Gill suggest, the PRC is more likely to operate a "credible minimal deterrence" on a strategic intercontinental level, while

operating a limited deterrence on a regional and theater level (2002, p.548). Nevertheless, the PRC will surely continue to modernize its nuclear forces toward the limited-deterrence level.

D. BALLISTIC MISSILE'S THREAT TO THE ROC

1. Psychological and Economical Impacts

The PLA conducted a series of missile exercises in the Taiwan Strait during 1995-1996. The purposes of the exercises were to "punish" former ROC President Lee's pragmatic diplomacy and to affect the outcome of the presidential election. In addition, the missile exercises signaled the PRC's negative response toward the U.S. decision to grant Lee a visitor's visa. More important, the PRC was trying to threaten Taiwan with the danger of war if Taiwan continued to move toward its independence.

The psychological trepidation of the missile threat reflected quickly on Taiwan's fragile stock market and entire economic system. On the day when the PRC announced its missile exercises in the Taiwan Strait in July 1995, Taiwan's stock market fell by 4.2 percent in one day and continued to drop for the remainder of the year (N/A, 2003). The stock market and the local currency in Taiwan again fell precipitously in March 1996, when the PRC conducted a second missile exercise. Millions of people went to the bank to buy U.S. currency. In addition, foreign investments were diminished by 100 billion dollars. To stabilize the economy and the stock market, the ROC government had to spend 237 billion dollars from the national reserve fund (Liang, 2002, p.81). It was the U.S. decision to deploy two aircraft carriers in the Taiwan Strait that finally settled the ROC's interior tension.

The threat to the Republic of China, Taiwan, of being attacked by mainland China's SAC ballistic missiles did not melt away when the missile exercises concluded in 1996. The continuous build-up of China's M-series ballistic missiles has resulted in a total of 350 and is projected to be 650 by 2006. And the incorporation of a GPS system into DF-15s amends the accuracy to 15 meters. To the majority of the population in the ROC, a psychological impact is inevitable and will force some of its local production and investments to move overseas, thereby affecting the overall economy even more in the long run.

2. Political Impacts

The PRC's missile threat was meant to prevent the ROC from drifting toward being an independent country. However, the threat to use ballistic missiles on the political dimension is far less effective than on the psychological and economical dimensions. The goals of the two missile exercises, in 1995 and 1996, were to intimidate the ROC into not using pragmatic diplomacy in an independence movement and to decrease the elective vote for Lee's re-election. But the result of the election was opposite to what the PRC had planned. The people of the Republic of China on Taiwan elected Lee as their first directly elected President. "Taiwan's electorate demonstrated to the PRC that its missile campaign of threats and intimidation were ill-conceived and ineffectual" (N/A, 2003). Rather than diminishing support for Lee, as Beijing and the PLA had hoped, the PRC round of missile tests and live-fire military exercises seemed only to have served to solidify his support; President Lee won with some 54 percent of the vote.

Although the missile exercises in 1995-96 proved to have a significant psychological and economical impact on the ROC government and population, the threat to use ballistic missiles was not a perfect solution. It could have negative outcome on the political dimension.

3. Military Impacts

According to the U.S. 2004 DoD annual report on the military power of People's Republic of China, "one of the military options against the ROC is to use SRBMs deployed in Nanjing MR. From their bases, any missiles with precision guidance could destroy key leadership facilities, military base, and communication and transportation nodes with minimal advanced warning" (p.49). A quick, surprise ballistic-missile attack can neutralize the ROC counter-offensive, and, therefore, allow the PRC to gain air and naval superiority for transporting ground forces. Furthermore, the increasing accuracy of M-series missiles enables the PLA to adopt a decapitation strategy, on the assumption that any successors would negotiate under conditions favorable to Beijing's interests.

E. SUMMARY

Prior to the 1980s, the PRC's development a of strategic missile force was constricted by technology and funding; therefore, only a few ballistic missiles were in SAC's inventories and they possessed neither ICBM nor SSBN. The PRC had no choice

but to adopt “limited deterrence” as its nuclear strategy. However, due to its modernization of the Second Artillery Corps, mostly through indigenous technology, the PRC are now one of the top five nuclear countries in the world equipped with variety of state-of-the-art tactical and strategic nuclear missiles. With such nuclear power, it is most likely that the PRC will shift from limited deterrence to minimum deterrence in the future, despite the PRC’s public denial.

The purpose of the strategic-level application of the PRC’s ballistic missiles is to deter the intervention of the United States, and probably Japan, in a Taiwan Strait conflict. The Beijing has constantly warned Washington authorities to contrast the value of Taipei and Los Angeles. As for the ROC, the use of ballistic missiles proved to be highly efficient in its negative effect on Taiwan’s fragile stock market, and the threat of their use can drive away foreign investment. Furthermore, a GPS-guided system can augment the accuracy of ballistic missiles thus enabling the PRC to target ROC military and political facilities. These decapitation and asymmetrical strategies can destroy ROC’s counter-offensive ability and erode Taiwan’s will to fight. Thereby bringing the ROC to its knees in a relatively short time and denying foreign intervention.

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V. INFORMATION WARFARE

A. BACKGROUND

The conclusion of the 1991 Gulf War reshaped many facets of modern warfare. Some military observers argue that the war has introduced a new era of air dominance, while others may discuss the importance of zero-casualties combat. Undeniably, the manner in which the advanced technology enables commanders to perceive the battlefield with satellite intelligence, to strike high-value targets with precision-guided missiles, and to conduct joint operations through information-sharing has received the most attention. For PLA elite officers, the perception is that the innovations in weapons and technologies from the U.S. revolution in military affairs (RMA) contributed to the overwhelming victory to the allied forces.

Since the early 1990s, the PRC has worked diligently to modernize its force to fight for a new doctrine of limited, local war under high-tech conditions. Among all the efforts, one of Beijing's high priorities for strategic modernization is the realm of information. Particularly, the concept of information warfare (IW) has emerged as a subject of the greatest attention in military discourse. Actually, the PRC will arguably be only the third country in the world aside from the United States and Russia to pursue IW strategy development. Why is the PRC so eager to achieve capability in information warfare? Although there are several motivations yet to be addressed, one of the pioneers in Chinese study, James Mulvenon, argues that the principle driver behind IW is the PRC assumption of using IW capability as an asymmetric weapon (1999, p.175). If implemented in the Taiwan Strait, information warfare strategies, if engaged successfully, could, first, deter or delay U.S. involvement, and, second, weaken the ROC's counter-defense ability by breaking down its communication and control nodes as part of a broader effort to bring Taiwan to its knees.

Since the PRC regards Taiwan as its highest priority in national sovereignty, and IW could achieve the reunification at a relatively lower cost, the next question then is: What is China's strategy on IW. Currently, the PRC does not have an official published doctrine on IW, so to answer the question, we must review articles written by some

pioneers of PRC's theorists in the field of IW, to see if their ideas are a blueprint of PRC IW strategies. In addition, China has several ancient masterpieces on warfare that still have a profound influence on PRC military strategies. This chapter will exam whether those traditional doctrines have brought new life into the idea of information warfare. This chapter will discuss some of advantages that the PLA can obtain if it successfully develops a comparable ability in IW to use during a Taiwan Strait military confrontation.

B. STRATEGIC DRIVERS FOR THE PRC'S PURSUIT OF AN INFORMATION WARFARE ABILITY

Perhaps the most important strategic driver for the PRC's pursuit of IW ability is the desire to deter U.S. involvement in the Taiwan Strait if a conflict should arise (Bolt, Brenner, 2004, p.130). Information warfare technology can delay a United States response and commitment in the Taiwan Strait in the event of PRC military operations. From the China's perspective, two crucial considerations influence the decision-making process in dealing with the Taiwan issue. First, the ROC possesses a reasonable quality and quantity of forces that can cause the PLA severe damage and casualties; and second, there is the United States' probable involvement in the event of war across the Taiwan Strait. The top leadership in the PRC concludes that the continuous support at military, political, and economic levels between the United States and the ROC has contributed to a more formally independent Taiwan. Without U.S. support, a country like Taiwan - with a population of only 22 million, less than 350-thousand troops, no strategic depth in terrain, and surrounded by an ocean - stands no chance in a fight against the world's second-largest country that has a population of 1.2 billion and 2.4 million regular forces. The 1996 presidential election in the ROC has further led to the conclusion that, whenever the PRC sets up a plan to reunify the two countries by force, the factor of U.S. involvement must be considered. However, the PLA has no chance in contending with U.S. forces conventionally. So, most likely, at the beginning of the conflict, the PLA will exercise information warfare as an asymmetric tool aimed at the vulnerability of U.S. forces, dependency on technologies (DoD report, 2000, p.34). Once the U.S. vanguard forces are paralyzed and delayed, the PRC will use all means to bend the ROC to its knees as quickly as possible. A fait accompli can prevent future U.S. involvement in the Taiwan Strait.

Many Chinese military strategists believe that the information warfare is a relatively new concept where the contest for supremacy is yet to be determined (Yoshihara, 2001, p. 7). The memory of Russia's possible invasion prior to the PRC's first successful nuclear weapon experiment in 1964 is still vivid in the minds of most top military and political leader. The slow development of its nuclear capacities worried the PRC throughout the mid 1980s. Since only a handful of countries are devoting an effort to the development of IW, the PRC would have a potential lead in this new warfare strategy after the United States and, therefore, could avoid the threat in the years to come. Major General Wang Baocun suggests that the PRC can intentionally follow in the footsteps of the United States to make fewer detours and find out its weakness (Wang, 2003). In addition, compared to its overall force modernization, IW actually can provide the PLA a solution to counter more technologically advance adversaries in a more cost-effective and suitable way than the current use of antiquated conventional armed forces.

The conclusion of the 1991 Gulf War had a more specific impact on the PLA's leaders than any other country. That is, both the PLA and Iraqi armed forces had some similarities. Most of the Iraqi ground force's weapons during the Gulf War were imported from China through the arms acquisition program (Shambaugh, 2004, p.253), and both countries had a large force structure. The shameful defeat of the Iraqi army would be a significant lesson for the PRC to pursue a new war-fighting strategy. One of the theorists concluded that, the in Operation Desert Storm, the United States had

> focused suppressive electromagnetic attacks and attacks with firepower against Iraq's strategic and operational-level information systems. These attacks thoroughly softened, dismembered, and paralyzed the Iraqi military's combat operations system. They left Iraq's radar blind, its communications disrupted, its command and control paralyzed, its coordination ineffective, and its weaponry uncontrolled. Ultimately Iraq, which was a huge war machine of the industrial age, became a "deaf and dumb giant," forced to passively endure a beating. The recent Iraq War was an early 21st century, information-based, asymmetric war (Dai, 2003).

Most of the PRC elite military officers, in the wake of the Iraq war have concluded that the current ability of the PLA is not sufficient to challenge a technologically advanced opponent like the United States in the foreseeable future. Since

war with the United States is seemingly inevitable, the PRC must find a way to diminish U.S. military power in the information age.

C. PRC'S INFORMATION WARFARE LITERATURE

Since the United States is the benchmark for modern military forces, it is necessary to understand the definition of information warfare in U.S. doctrine and to find out if those ideas can be translated into Chinese IW thinking.

It is not difficult to find a clear and precise U.S. definition of information warfare since several military doctrines have revealed it publicly. The U.S. joint doctrine entitled *Information Operations* defines information warfare as "actions taken to affect adversary information and information systems while defending one's own information and information systems" (1998, p.21). In addition, the *Joint Vision 2020* further explains that "information operations include actions taken in a non-combat or ambiguous situation to protect one's own information and information systems as well as those taken to influence target information and information systems" (2000, p.28). Both definitions provide a clear understanding of what U.S. thinking is on information warfare.

It is not an easy task, however, to find a definite explanation of Chinese thinking about IW, since currently no doctrine has been published. However, numerous theorists, both high-ranking officers in the PLA and elite scholars in government agencies have published their ideas on IW. Although their thinking on IW has not received official recognition by the PLA, and much of it is either plagiarized from U.S. doctrines or echoes one another's views (Mulvenon, 1999, p.181), there are certainly important and astonishing differences between the Chinese and American IW literatures. Among those theorists was the foremost pioneer Major General Wang Pufeng who provides a broad strategic definition of IW:

> Information war is a product of the information age which to a great extent utilizes information technology and information ordnance in battle. It constitutes a "networkization" of the battlefield, and a new model for a complete contest of time and space. At its center is the fight to control the information battlefield and thereby to influence of decides victory or defeat (Arquilla & Karmel, 1997, p.259).

One definition given by Major General Wang Baocun and Li Fei emphasizes on the tactical level of information warfare:

> Information warfare is combat operations in a high-tech battlefield environment in which both sides use information-technology means, equipment, or systems in a rivalry over the power to obtain, control, and use information. Information warfare is a combat aimed at seizing the battlefield initiative; with digitized units as its essential combat force; the seizure, control, and use of information as its main substance; and its major means (1998, p.328).

Another example given by Chen Qingrong focuses on the tactical level:

> Information tactics have penetrated into all types of armament and equipment, combat tactics, and command – combining them in the form of a network, with the result that in future warfare the traditional race to control the air and the sea will become contention for control of information (Shambaugh, 2004, p.77).

Clearly, on a strategic level, the PLA shares very similar views on IW with the United States: information warfare will control the form and future of war. But yet on the tactical level, the PRC approaches IW from a more offensive perspective, that is, focusing on enhancing its ability in IW to defeat a technologically superior opponent. More specifically, the IW tactics should include electromagnetic attack; logic attacks utilizing computer viruses and hacker intrusions; psychological attack; and actual physical destruction of C4 systems by missiles, airpower, and high-energy weapons (Bolt & Brenner, 2004, p.133). Perhaps the most astonishing view of the PRC's IW strategy is the application of IW as an unconventional warfare tool against technologically advanced adversaries at the beginning of a conflict rather than as a battlefield force multiplier (Mulvenon, 1999, p.183). Most Chinese military strategists believe the current PLA abilities are still far behind and cannot cope with the United States in a head-to-head confrontation in the foreseeable future. Therefore, the use of IW as an asymmetric weapon targeting the U.S.'s reliance on networked communication could exploit their vulnerabilities and turn what is China's disadvantage of backward technologies to an advantage. Thus, Mao's notion of "defeating the superior with the inferior," has deep roots in both ancient and modern Chinese military strategies. It is suitable for the current PRC economic and financial situation, allowing the PRC to develop a limited and focused strategy while not drawing on all its national resources. For PRC elite leaders, the collapse of the USSR was most likely due to its devoting a considerable part of its

GNP to a military buildup in an arms race with the United States. China should carefully select its strategy so as not to commit the same error as the USSR.

Recently, rather than mirror and try to keep up with U.S. strategies, the PRC information warfare theorists are working closely to develop an IW doctrine and capabilities with Chinese characteristics. Former CMC chairman Jiang Zemin urged the PLA to pursue a revolution in military affairs with Chinese characteristics within the specific historical conditions in China and so embody the characteristics of the Chinese people. In response to Jiang's call, Major General Ku GuiSheng advocated four major characteristics of China's revolution in military affairs (RMA) (Kuo, 2003):

1. The RMA with Chinese characteristics must draw on our military cultural legacy from Sun Tzu to Mao;
2. The RMA must embody the Army-building principles of the PLA;
3. The RMA must suit China's current material technological base and the state of China's public finances, and
4. The RMA must consider the current mechanized and semi-mechanized state of the Chinese armed forces.

The first point deserves further elaboration. In one of his interviews, Major General Wang Pufeng assured that the PLA's IW strategies must be in accordance with the people's war (Ma, 2000). The people's war has always been a cornerstone of a modern Chinese military strategy that is both political in nature and in the extent of mass participation. Clearly, in this of information age, it is easy to see that advanced technologies can overcome a huge number of poorly trained and equipped soldiers and citizens. But some IW strategists seem to refine and retain the relevance of a people's war with high-tech information warfare. They advocate that the PRC should both increase the computer-literacy among the general population and develop an adequate size group of specialized experts on advanced computer skills. One of the methods is to expand the general education through college- and postgraduate- level study (Wu, 2003). Following Wang's idea of integrating IW with Mao's concept, another IW strategist, Wei Jincheng, stated that the people's war and IW can be successfully:

> carried out by hundreds of millions of people using open-type modern information systems. Because the traditional mode of industrial production has changed from centralization to dispersion, and commercial activities have expanded from urban to rural areas, the working method and… the

> chance of the people taking the initiative and randomly participating in the war increased (1996).

The implementation of a people's war in the information age is to use millions of personal computers to jam an adversary's computer systems through a massive volume of communication. Also, professional hackers can further break into the adversary's economic, political, financial, and military systems to steal classified data or spread computer viruses. The U.S. Department of Defense 2000 on PRC military report even suggests that the Chinese government will have a stronger role in future nationalistic hacking (p.35). The idea of integrating a people's war with information warfare is still in great doubt, and exposure of more of the population to the internet via computers may cause a negative effect, undermining the authoritative-control regime.

Another of Mao's concepts that has had a deep impact on the formation of the PRC's IW strategies is the notion of "using the inferior to overcome the superior". Wang Pufeng states that since in the war of the future, China is most likely to face technologically advanced opponents, China will still need to carry out its traditional warfare method of "you fight your way, I fight my way" in order to counteract the superior enemy. He further stresses that China must direct more attention to several aspects to be better prepared to fight the wars to come:

> Developing, improving, and utilizing China's information weapons in a concentrated way to carry out raids on enemy operation platforms and bases and damage and foil the enemy's offensive; conscientiously organizing sabotage operations by the PLA, grasp exploitable opportunities, and make continuous raids to exhaust and wear down the enemy; organizing specialized combined special warfare troops and equip these with information technology weapons to carry out powerful special warfare (1998, p.324).

In addition to Wang's comments, another theorist, Dai, also expressed his opinion on how to fight a superior opponent in the information age:

> It is evident that the greater the degree of informationization a side has, the greater will be its dependence on information superiority, and this aggravates its weakness due to excessive reliance on information systems. Launching information attack against an opponent's highly information-based combat operations systems can greatly weaken his overall combat effectiveness. Information attack can completely disrupt

> an information system. Information attack is highly controllable, and it has quite a favorable cost-benefit ratio. Information attack is an important strategic way by which a side can use inferior assets to defeat an opponent having the advantage in the information age.

The PLA recognizes that it would be difficult for China to catch up with the military might of Western countries (primarily the United States) in the foreseeable future due to its limited defense budget and backward technologies. Therefore, the PLA is working diligently to develop a "trump card" or "pocket of excellence" to deliver devastating effects to a potential adversary's key vulnerability (DoD, 2000, p.35). Although the use of the "trump card" cannot guarantee the total victory over the advanced foe, it certainly can delay or deny the enemy's ability to maneuver against the PLA's further possible operations.

Other than Mao's people's war, the PLA also relies heavily on ancient military strategies, mainly those of Sun Tzu and Thirty-Six stratagems when developing information warfare with Chinese characteristics. Actually, the presence of Sun Tzu's military and political philosophy is inescapable in modern Chinese military strategies. The interpretation of one of Sun Tzu's notions - "winning the battle without fighting and bloodshed" - suggests that the PLA should attack an enemy's strategy without actually engaging in combat (Yoshihara, 2001, p.15). This concept has been magnified to the strategic level of psychological warfare targeting the adversary's will to fight and the influence of mass public opinion. The traditional military-attack objectives were only the enemy's military power and economic potential, but in IW, the attack will tear through the enemy's military, politics, economy, and whole society, even to its moral, faith, and psychological foundations. Mulvenon suggests that "the IW permits China to fight and win an information campaign, precluding the need for military action" (1999, p.183). By attacking and crippling the enemy's vital points on its C4ISR system and demonstrating the ability to inflict enough human loss to the adversary at the very outset of war, the PRC could hope to reduce the adversary's will to fight.

The Thirty-Six stratagems have new meaning for the PRC in the information age. All of the stratagems are derived from the accumulated wisdom of ancient Chinese history that involved military, political, and diplomatic conflicts. Although each

stratagem has a unique historical background and may not be suitable or relevant for the modern world, nonetheless, the PRC can use an application of these stratagems to form its IW strategies. Thomas suggests several possible new applications of these ancient stratagems: for example, one of the stratagems - "besiege Wei to rescue Zhao" - implies the idea that when the enemy is too strong to attack directly, attack something he holds dear. The IW application is this: if you cannot reach the enemy due to limited abilities or constraints, then attack his computer infrastructures responsible for his financial, military, and political stability. Another stratagem is "kill with a borrowed sword," which suggests that if you don't want to, or simply don't have the ability to, attack your enemy directly, then attack using the strength of others. The utilization of this stratagem in IW is to send your computer viruses through another country for plausible deniability (2000).

The use of Sun Tzu, the Thirty-Six stratagems, and Mao's notion of people's war provides the PRC a new framework to develop IW strategy with Chinese characteristics. The significance of this can be understood by reviewing recent Chinese writing on IW. In brief, the PRC is more likely to use surprise and a preemptive attack to destroy the enemy's C4ISR system at the beginning of a conflict to offset a more technologically advanced military foe. Although the PRC's current IW operational abilities to carry out such an attack are still in great doubt; nevertheless, the PRC will certainly keep developing these abilities in anticipation of a U.S. involvement in the Taiwan Strait.

D. IW ADVANTAGES FOR THE PRC IN THE TAIWAN STRAIT

In the case of the Taiwan Strait-conflict scenario, without a doubt, the PRC has significant advantages in the quantity of armed forces, short- and long- range ballistic missiles, and an overwhelming number of combat airplanes. However, it is unlikely that the PRC will lunch a conventional Normandy-type invasion for three reasons. First, the PLA Navy does not possess sufficient sea-lift ability to transport enough ground forces across the Taiwan Strait. The idea of using commercial fishing boats as substitutes for an amphibious fleet is now considered extremely dangerous: it would turn a "million boats" into a "million swim" when faced with an ROC anti-amphibious strike (O'Hanlon, 2000, p.62). Second, even though the PRC has improved the quality of its Air Force and Navy, the ROC still has a slight air and sea superiority over the PRC in the Taiwan Strait. The use of force in a direct head-to-head confrontation is possible, but the PRC would also

suffer damage as severe as Taiwan's, since the most developed regions in China are located just opposite Taiwan. Third, the embargos by both the European Union and the United States after the brutal massacre in Tiananmen Square and the world's impression of a repressive authoritarian regime still haunts China and has severely damaged its economy (Wikipedia, 2004). A large-scale invasion will more likely result in civilian casualties on both sides and would, therefore, damage the PRC's reputation and slow down the economy. All those considerations, and the pattern of a PRC use of forces in history, suggest that the PLA should employ IW at the beginning of a conflict to paralyze Taiwan's defense and eliminate the possibility of U.S. involvement. From the PRC's perspective, by developing the capabilities of IW, the PRC hopes to achieve at least several of the advantages discussed below:

1. IW is Characterized by "Low Cost, Fast Pace, and Quick Results"

In solving the Taiwan's issue, in addition to minimizing destruction of the economical infrastructure, the PRC also wants it to be "quick". The PLA has been influenced by Sun Tzu's thinking that "protracted war could be hazardous to the invading state". If war across the strait becomes dilatory and prolonged and causalities arise on both sides, the PRC would face either potential domestic disturbances by Tibetans, Mongolians, and political reformers or foreign intervention by Japan and/or the United States. Those factors are crucial for the PRC's top leaders to consider, because the failure of a military resolution with Taiwan might have severe consequences for the Chinese Communist Party rulers. From a strategic point of view, IW is characterized by "low cost, high efficiency, fast paced, quick results and the first battle is the decisive battle", and, when used properly, can gain the initiative by striking first to paralyze ROC defense abilities, followed by massive invading airborne and seaborne forces. The fait accompli of military action within a reasonable and acceptable time frame can certainly decrease the possibility of foreign intervention and prevent any domestic political instability.

2. The Employment of IW can be Adjusted Accordingly to an International Response

Information warfare is a new type of warfare in which states engage in wars of minds and intelligences on an invisible battlefield. IW does not require a state to mobilize troops and logistic materials for battle, so there is no need for states to formally declare

war prior to actual conflict. Using this argument, the PRC would have the option to only engage in "soft kill" types of IW, which use computer viruses, hackers, and electromagnetic jamming, to test ROC defensive abilities. Based on the test results of a small scale IW, the PRC will have a better understanding of ROC reactive abilities, the United States' commitment in the Taiwan Strait, and future strategies toward reunification.

3. IW can Avoid or Minimize Bloodshed and thus Diminish the Level of Hatred Among the Population in Taiwan After Reunification Under PRC Terms

The notion that "it is better not having anyone die, but if not avoidable, only the soldiers" has been the strategic guide for invading Taiwan; the PRC's plan is to limit war to a local scale of military operation. On the other hand, the ROC has significant numbers of military forces and advanced weaponry. The terrain is either mountainous or urban and thus is suitable for guerrilla and urban operations. In addition, there are only a few coastlines on Taiwan that are suitable for conducting amphibious operations. So possible conventional attacks will likely involve air bombs, blockade, and ballistic missiles. However, those tactics usually extend the war and cause heavy causalities within the civilian population. Looking back at the history of Taiwan, there were numerous uprisings among the population under foreign government-ruling. From this point of view, if mainland China takes back Taiwan by force causing large civilian causalities, the problems of its future rule may be more serious than in the Xin-Jiang province now. IW gives the PRC a way to approach from the inside out. IW attacks can cut down communications, disturb economical systems, and broadcast misleading news from jammed radio or television stations.

E. CONCLUSION

A wise Chinese thinker once said, "The water that bears the boat is the same that swallows it." Although the PRC is working industriously on developing its capabilities in IW for the purposes discussed earlier, the PRC still faces at least two dilemmas. First, success in IW depends largely on a well-developed national information infrastructure. Internet access and satellite television is becoming popular in the south-east of the regime, and for an authoritarian state like China, any increase in information capability poses a threat to its national stability. A greater flow of information mixed with Western

democracy and economic prosperity can backfire for the PRC government. Second, the protesting students in Tiananmen Square in 1989 had nothing except rocks and banners to defend themselves against slaughtering soldiers; now, an enormous number of citizens, particular those highly educated, are trained in hacking, virus-planting, and code-breaking against foreign countries. Their loyalty to the regime should be a grave concern for the security of the PRC simply because those "net soldiers and citizens" might use their abilities against their own government in the next demonstration to come.

In conclusion, the PRC's strategic goal for developing IW capabilities is to delay or deny the possibility of U.S. intervention if the PRC chooses aggressive action against Taiwan. Even though the China's actual operational abilities are yet to be determined, its current Chinese writing on IW strategies shows signs that a use of IW as an asymmetric weapon against the enemy in the initial stage of a conflict is intended. With the modernization of its armed forces and the elimination of obsolete inventories, the PRC has a better chance to conduct a successful war in the years to come.

VI. PRC MILITARY OPTIONS AGAINST ROC

A. BACKGROUND

Beijing's Taiwan policy has evolved in different time periods from "blood-washing Taiwan", "reunification by means of force" and, "peaceful negotiation", to "one country, two systems", but has retained the use of force as an unchanged essence. In its White Paper, "The Taiwan Question and Reunification of China", the PRC regarded the reunification of Taiwan with mainland China a sacrosanct mission of the entire Chinese people. To this end, the PRC propose a peaceful reunification. However, the PRC also reserves the right to use any means it deems necessary, including military operations to maintain its sovereignty and territorial integrity (1993). Although the PRC elite leaders have previously defined the circumstances of the reunification under which it will resort to force, a recent document adds yet another condition: the Taiwan authorities' decision to refuse indefinitely to resolve the issue of cross-strait reunification peacefully by virtue of negotiations (N/D, 2002). Obviously, Beijing is losing patience with the so-called peaceful reunification.

The threat of reunification by force is now more credible than ever, given to the PRC military buildup since the 1980s. The PRC's determination to seize Taiwan is beyond all doubt, but how to achieve that objective is still arguable. Although the PRC has significant and numerous advantages over ROC forces, it is highly unlikely that the PRC would engage most of, or even a significant portion of, its military force against Taiwan (Shambaugh, 2004, p.311).

Traditionally, an invasion would most likely include conventional approaches such as missile strikes, a naval blockade, and an amphibious assault. However, modernization programs have greatly enhanced the PLA's ability to wage a limited, local war under high-tech conditions, which also expand the military options for PRC aggression toward Taiwan. The PLA now possesses a stronger ability and a better chance to keep its word on the reunification of Taiwan.

According to its 2004 annual report on PRC military power, the United States Department of Defense suggests that Beijing's military options might include one or

more of the following, but not be limited to, a naval blockade, an amphibious invasion, information operations, an air campaign, use of conventional ballistic missiles, and ground forces with special force operations (2004, p.48). Among all the courses of actions, strictly from a military point of view, the PLA could use conventional approaches. However, given such considerations as its current military limitations, the cost-benefit analysis on both sides, the possibility of foreign intervention and the continued financial prosperity of Taiwan after the reunification, the PLA is now more inclined to an asymmetric operation to seize Taiwan. Furthermore, the pattern in Chinese use of forces also suggests that the PLA has been successful since its establishment at achieving offensive surprise.

This chapter will first briefly discuss why the possibility of a PRC decision to use a conventional approach has diminished. It will then discuss asymmetric military options to solve the Taiwan issue, based on the PRC's current capabilities and threat perception of external factors.

B. CONVENTIONAL APPROACHES

The PRC courses of action for conventional approaches most likely include but not are limited to two options: naval blockade and amphibious assault. Each has significant disadvantages that not suitable for the PRC's aggressive reunification strategies.

1. Naval Blockade

One of the ROC's strategic vulnerabilities is its heavy reliance on foreign trade which comprises almost two-thirds of its gross domestic product. All of that trade is made mainly by sea. It is clear that, rather than try to use of force to invade Taiwan, the PRC could aim at the ROC economy and try to drag it down substantially for a prolonged period of time. A blockade can certainly throw the ROC stock market and business confidence into chaos as happened in the 1995-96 missile crisis. A devastated economy would diminish the ROC's will to fight and force Taipei authorities to negotiate solutions on terms favorable to Beijing.

A blockade is a strategy far less costly and dangerous to the PLA than the use of force. If successful, it could severely cripple Taiwan economically without damaging its infrastructure or causing massive amounts of civilian casualties. However, a blockade

could succeed only over time and it would give the ROC sufficient time to mobilize its reserve force in anticipation of a larger invasion to come. Furthermore, the Taiwan Strait is an important waterway for many countries; closing it would harm their economies as well (Dreyer, 1999). Thus, a potential for international pressure could hamper a PRC decision to engage in a naval blockade. More important, a prolonged blockade of the Taiwan Strait could also give ROC supporters, primarily the United States, time to come to the aid of Taiwan based on the Taiwan Relations Act. In that case, the PRC might be in danger of confronting a much more superior opponent.

2. Amphibious Assault

Many experts have suggested that an amphibious assault would be a most unlikely and unfavorable option for the PLA in forcing a reunification of Taiwan with the mainland China. A PLA success in a D-Day type of invasion would not be guaranteed and would be extremely dangerous. The lack of a sufficient amphibious and air-lifts capacity would significantly reduce the number of ground forces in the first wave of attack (Shambaugh, 2004, p.325). Also, the interoperability of the PLA and its logistical support for such an invasion are still beyond current PLA abilities (DOD, 2000, p.50). Moreover, much of the ROC's defense effort is geared toward repelling an amphibious assault against offshore islands, and therefore, its fortified artillery positions and mechanized infantry brigades are deployed along the coast in preparation for an amphibious assault across the Strait. Nevertheless, the PLA could choose an amphibious assault as a means to seize Taiwan, but the diplomatic, political, economic, and military costs would be much higher than any other options

C. ASYMMETRIC APPROACHES

Under the new doctrine of "limited, local war under high-tech conditions", the PLA is undergoing serious transformations. The military modernizations and doctrinal changes will dramatically increase its abilities in a few specific areas. Beijing's uppermost strategy would most likely be to seek a rapid collapse of ROC's national will in countering a PRC aggressive invasion in order to preclude the United States from intervening on Taipei's behalf (DoD, 2000, p.45). Therefore, asymmetric approaches of reunification would provide the PRC with suitable options to conduct a rapid surprise

attack against the ROC while denying or delaying U.S. intervention. Beijing might include some combination of the options specified below.

1. Information Warfare

The purposes for the development on information warfare capabilities are manifold. First, IW can serve as an asymmetric weapon to deny or delay the possibilities of U.S. involvement in the Taiwan Strait. Second, it can "blind" the ROC's antimissile/anti-air-defense, intelligence, and C4ISR systems, and therefore, severely damage or destroy the ROC's retaliatory capabilities in the initial stage of the conflict (Shambaugh, 2000, p.129). Once the PLA achieves those objectives in a Taiwan Strait conflict, a larger scale invasion could follow. The PLA offensive IW developments usually involve two types described below.

a. Electronic Warfare (EW)

After observing the NATO operation in the former Yugoslavia, several PLA elite officers concluded that the use of a NATO electronic warfare plane to emit an electromagnetic pulse-bomb had severely jammed and confused Serbian communications. Therefore, the PLA also could use electronic jamming, electronic deception, and electromagnetic pulse-bombs to disable the enemy's effective electronic equipment (Yoshihara, 2001, p.17). China's EW efforts are focused on technology and design development through cooperation with Western companies by reverse-engineering and foreign procurement (DoD, 2003, p.35). Most of those technologies are to improve its intercept, direction-finding, and jamming capabilities. In the Taiwan Strait conflict, the PLA could use EW as a denial and deception technique to counter the U.S. advanced weaponry system, to create ambiguity about China's actual intentions, and to force ROC military leaders to misallocate resources (N/A, 1999, p.11). For the PLA, EW is an emerging aspect of its operations and is viewed as crucial to information dominance. The basic objectives of an EW attack are to conceal the PLA's operational preparations and to paralyze the enemy's integrated air defense systems.

The PRC is placing a great deal of emphasis on the enhancement of its EW ability. Several research institutes are conducting operational feasibility studies on using UAVs to carry out the electronic warfare. One of the PRC's newly deployed UAVs is the ASN-206, which can cover up to 150 kilometers and is equipped with optical and

infrared sensors (Stokes, 1999, p.42). It can also transmit real-time intelligence to a ground control station for targeting purposes. Moreover, the PRC is testing a SATCOM jammer which has an ability to jam synthetic aperture radar reconnaissance satellites (p.53). With those EW capabilities, the PRC can conceal its operational preparation as well as conduct long-range reconnaissance and surveillance.

In its 2003 defense report, the ROC Department of Defense stated that "the threat of using electromagnetic pulse bombs and highly complicated computer viruses to paralyze ROC's command system are more credible than ever and will likely grow in the years to come" (N/A, 2003). Most likely, once the PRC has full or part EW capabilities, it could serve as an asymmetric weapon for destroying ROC defense systems and communication nodes followed by a rapid surprise attack. In addition, the PRC could also disrupt the U.S. intelligence-gathering abilities from the satellite and early-warning systems in the sky.

b. Computer Network Attack (CNA)

Both the United States and ROC rely heavily on computer and information systems not only for military application but also day-to-day life. From the PRC's point of view, this is also a vulnerability, one that PRC could exploit. Recently, the PRC has devoted extreme effort toward developing its CNA abilities. Several elite officers of the PLA have suggested that the CNA can be used as a weapon to destroy ROC communication, financial, and power networks, thereby, creating a chaos (Brown etc, 2003, p.55). Eventually, the paniced and nervous public would force the Taiwan government into negotiations under terms favorable to China.

As discussed in an earlier chapter, the PRC is trying to develop IW strategies with Chinese characteristics that emphasize the integration of a people's war and information warfare. Prior to the conflict, the PRC would try to jam the adversary's computer systems via the internet by a massive volume of communications. Another method the PRC might engage is national hacking (DoD, 2000, p.35). Although the degree of governmental involvement in hacking is not clear, several PLA institutes have been established, in Amoy and Shanghai, that specialize in training "net soldiers" (Wu, 2003). Furthermore, the PLA also sponsors university or higher degrees for information security curriculum and recruits the graduates.

In addition, the PRC could destroy or paralyze the United States or ROC computer networks by spreading the viruses. This strategy corresponds to PLA notion of "winning the battle without fighting and bloodshed". The PLA witnessed the effectiveness of the U.S. employment of viruses against Iraqi computer systems during the 1991 Gulf War; therefore, the PLA regards computer viruses as a useful weapon. Engineers are continuously introducing new viruses, as well as the means to deliver them into adversaries' computers (Stoke, 1999, p.52). Meanwhile, the study also could be beneficial to the PLA in developing countermeasures if an enemy were to deliver a virus back to the PRC.

2. Conventional Ballistic Missile

The PLA missile buildups across the Taiwan Strait have served as a coercive strategy against the ROC. Currently, the PLA has deployed approximately 350 conventional short-range ballistic missiles among three brigades opposite Taiwan, and it is estimated that the total number of ballistic missiles would increase to 650 with the next few years.

In addition, those M-series SRBMs are now integrated with a global positioning system to support midcourse and terminal guidance which significantly increase the accuracy and lethality. According to the ROC 2003 Defense Report, by 2010, approximately 50 percent of PRC cruise missiles may have achieved a CEP of 5 to 10 meters, and ballistic missiles 30 to 45 meters. This precision-strike ability, or acupuncture warfare, could pose a severe threat to the ROC governmental administrations, military command centers, and C4ISR systems, cutting off the military force in the field from its political and military leadership in Taipei.

Equally important, the U.S. 2004 DoD report also suggests that the increased accuracy of its ballistic missiles could provide the PLA the possibility of adopting a decapitation strategy (p.48). In other words, the PLA could execute political and military leaders and create internal disorder. The resulting chaotic situation would seriously weaken the ROC's ability to respond to the attack to come.

As for the United States, the development of LRBM DF-41- and SSBN equipped JL-2s has a significant purpose: to deter U.S. involvement in the Taiwan Strait should a

conflict break out. The statement by General Xiong Guangkai that "the United States will not defend Taiwan because the Americans care more about Los Angeles than Taipei" fully demonstrates the importance of this deterrence.

3. Special Forces Operation

Recently, the total strength of PRC's Army special forces is estimated as high as seven regiments and twenty-four battalions, or approximately 25,000 personnel (1999, p.52). Each ASF unit is equipped with the most advanced weapon systems, remotely piloted vehicles (RPV), night-vision goggles (NVG), and GPS satellite communication systems, equivalent to the Western counterparts. They are considered the most highly trained special forces, with modern weapons and equipment.

According to Lin Chong-Pin, the former vice minister of the ROC Department of Defense, one of the PRC's military options in asymmetric warfare is to dispatch a portion of its SF into ROC territory to conduct operations which would be crucial to an overall victory (Cao, 2001, p.143). Their missions would most likely include conducting surveillance of the battlefield; locating or destroying C4I assets and logistical depots; supporting or coordinating invasion troops; destroying airfields and seaports; destroying air defense assets; conducting denial and deception and information operations (DoD, 2000, p.28). If the SF successfully accomplish those missions, the ROC's military ability would be significantly damaged and would be vulnerable for PRC invasions. Furthermore, the SF could also carry out a decapitation strategy in the assassination of key ROC political and military leaders, thereby, creating internal chaos.

4. Unrestricted Warfare

Two PLA Air Force colonels published the book, "Unrestricted Warfare", in 1999 which suggests an offensive warfare that surpasses all conventional boundaries, ethics and concepts of war. Although the PLA has yet to officially adopt such unrestricted warfare as standard doctrine, the book was published by the PLA's Literature and Arts Publishing House in Beijing, which suggests that its release was affiliated to some high levels of the PLA leadership. In the book, the two authors discuss twenty-four different "military", "trans-military", and "non-military" strategies, from financial warfare, terrorist warfare, bio-chemical warfare, smuggling warfare, etc. (Qiao & Wang, 1999, p.146). The book suggests that, in modern warfare, all of those strategies could be mixed

and practiced for the sole purpose of defeating an enemy. The PLA's acceptance of this unrestricted warfare is unknown, but should it decide to engage those strategies, the purpose would be Taiwan's military, political, and financial destruction.

5. Psychological Warfare

According to Yoshihara, psychological warfare involves "the transmission of information or misinformation to influence the intended audiences' emotions, mode of thinking and ultimately their behavior" (2001, p.17). The PRC deployed a successful psychological operation against Taiwan during the early stages of the 1995-96 missiles crisis. The missile exercises had a serious impact on the ROC's lifeblood of international trade and popular confidence. The stock market plummeted nearly 1,000 points in three days and 15 billion investments reportedly fled the island (Shambaugh, 2000, p.129). It was not until the U.S. dispatched two aircraft carriers to the Taiwan Strait that the economy finally stabilized.

The PLA could enhance such psychological warfare by coordinating it with information warfare. In a Taiwan Strait conflict, the PLA could break into the ROC command-center systems and issue false orders to confuse the troops in the field. Next, the PLA could jam Taiwan's major radio and television signals and then broadcast false images of top military and political leaders ordering the troops to surrender. Those methods would certainly confuse and create mistrust within the troops and among their commanders.

D. SUMMARY

There is no doubt that the People's Liberation Army's modernization programs since the mid 1980s have significant improved its overall military capabilities. However, due to the anticipation of foreign involvement, primarily from the United States, a lack of sea- and air-lift capacities, and the continued prosperity of the Taiwan economy, even after invasion, the PLA is unlikely to use a conventional approach for reunification.

On the other hand, the notions of "using the inferior to defeat the superior" and "winning the war without bloodshed" have deep roots in PLA strategic thinking. Furthermore, the modernization program has developed a "pocket of excellence" to conduct a surprise, rapid, and decisive war against its enemy. The use of asymmetric approaches are suitable for the current doctrine of fighting a "limited, local war under

high-tech conditions". By engaging a combination of the asymmetric approaches analyzed here, the PLA could delay U.S. involvement and conduct a surprise rapid attack against the ROC. The fait accompli would deny any further international intervention on behalf of Taiwan, the Republic of China.

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VII. SUGGESTIONS AND CONCLUSION

A. SUGGESTIONS

Since the split of the countries in 1949, the People's Republic of China's one-China policy has imposed a diplomatic blockade to isolate the Republic of China, from the international community - both governmental and its non-governmental organizations. Furthermore, the fact that the PRC refuses to renounce the use of force against Taiwan for reunification could mean grave danger for the future security of the ROC. The imbalance of military power in every aspect on both sides has seemingly made defending Taiwan an almost impossible task unless a third party intervenes. However, the U.S. 2004 DoD annual report on PRC military power suggests the measures that ROC could adopt to resist the threat from mainland China (p.52).

1. A First or Retaliative Strike against the PRC

The lethality and accuracy of PLA M-series ballistic missiles will increase as its number continue to grow in the next few years. Although the ROC has purchased the Modified Air Defense System (MADS), an improved variant of the PATRIOT surface-to-air-missile (SAM) system, which was used during Desert Storm (N/A, 1999, p.5), it is not effective and sufficient enough to offset the quantitative advantages of PLA missiles.

Recently, some top ROC political leaders have suggested that Taiwan's armed forces should acquire the ability to deter a Chinese attack by making it unacceptably costly. Premier You, Shyi-Kun of the ROC Executive Yuan publicly stated that if the mainland fired 100 missiles at the island, the ROC forces could attack Shanghai with 50 missiles (N/A, 2004). Of course, this "balance of terror" has prompted criticism both at home and abroad, particularly in the PRC. Beijing called the premier's statement a provocative act and reiterated its own determination to use force against the ROC if the island declares independence. However, strictly from the military point of view, since Taipei cannot afford an arms race with Beijing, the possession of a limited offensive strike ability against China could serve as a means to deter China's aggressive coercion.

2. Information Operation

One of the ROC's major exports is computer hardware and accessories, which gives the island a greater potential in developing information-operation abilities than the

PRC. Moreover, the ROC conscript system recruits numerous computer-talented soldiers into the armed service. While Beijing expands it capacity for computer network attacks and electronic warfare, the ROC can devote efforts toward attacking China's command and control system to achieve information superiority (DoD, 2004, p.53). Just like the PLA's intention to paralyze the ROC's defense system at an initial stage of a conflict, the ROC could attack Chinese military airfields, communication nodes, and command centers to delay the PLA's further operations against ROC.

3. The ROC's Will to Fight

Although the PRC has decisive numerical advantages over the ROC, based on its current doctrine and limited conventional capabilities, the PLA would most likely engage in asymmetric operations during a Taiwan Strait conflict. The ROC could be struck by precision-guided missiles and EW paralyzation, and therefore suffer significant losses during the first wave of attack. However, unless the PLA ground forces actual occupy the island, the result of the war would be decided by whether the ROC could resist coercion, cohere public support and regroup its forces for a counterattack. The Yugoslavia absorption of enormous bombing from NATO air campaigns without surrender can be a great example for Taipei resistance (Shambaugh, 2004, p.88). In the case of a PRC invasion, the biggest threat to the ROC is not the PRC's aggressive force, but a loss of the will to fight, hence surrender. If Taipei can prove to Beijing that the people on Taiwan are determined to fight against a PRC aggression, a PRC coercive strategy would be fruitless.

B. CONCLUSION

China is a rising country, and it is only natural for a country to use its newly developed economy and resources to strengthen its military capabilities. For the past two decades, the PLA has undergone a significant downsizing and overall force modernization. The PLA has acquired some state-of-the-art weapons both from Western countries and by indigenous production. A more effective PLA can enable China's regional hegemony as well giving China the ability to solve the long-standing Taiwan issue.

From the PRC's perspective, the reunification of Taiwan is the highest mission of its national sovereignty. Even though Beijing publicly stated that a peaceful resolution is

preferred, it has never renounced the use of force against the ROC. China now has two viable approaches for military operations. In a conventional approach, the PLA's amphibious-assault operational ability could be constricted by its limited sea-lift transportation capacity. Moreover, the anticipation of foreign intervention in a prolonged war would rule out a blockade strategy. On the other hand, an asymmetric approach provides the PLA the ability to coerce Taiwan from formally declaring its independence, and to conduct a rapid surprise attack to seize the ROC if the use of force is necessary. As for potential U.S. intervention in the Taiwan Strait, the PLA would first use its nuclear missiles to deter U.S. involvement. If deterrence should fail, the PLA can use asymmetric methods such as electronic warfare and computer network attack to delay and deny their technologically advanced force by exploiting the U.S. reliance on technology.

Facing continuous aggression, the ROC also could also use asymmetric strategies to deter the PRC attack by making it unacceptably costly. Examples could involved ballistic or cruise missiles, EW, CNA, or special forces operations. Most of all, the ROC must unite public support and strength the population's will to fight in order to counter the PRC's threat of asymmetric operations.

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